

THE TIMES

Dreams of a peaceful revolution: interview with M Giscard, page 12

Two suspended by Lloyds after £33m losses on currency deals

Unauthorized dealings in foreign currencies on the forward market have cost Lloyds Bank an estimated £33m, it was revealed yesterday. The loss resulted from transactions carried out by Mr Marc Colombo, the dealer at Lloyds Bank International's Lugano branch in Switzerland. Both he and the branch manager have been suspended.

Irregularities at Lugano branch

By Ian Morrison
Financial Correspondent
The Lloyds Bank group has incurred an estimated pre-tax loss of £33m as a result of unauthorized foreign exchange transactions by a dealer at its branch in Lugano, Switzerland. The position has now been regularized, the bank said yesterday. "All commitments of the branch are of course covered by Lloyds Bank International, which is the international arm of the group."

that he can sell it at a profit on the spot market. The precise scale of Mr Colombo's forward transaction has not been disclosed, nor the currencies in which he dealt. However, foreign exchange dealers estimated yesterday that the "open" positions could have amounted in sterling terms to over £500m. "Lloyds has now 'closed' all the positions, by matching every forward purchase with a forward sale, and vice versa. Foreign exchange dealers argue that if the consequential loss is £33m, the gross amounts involved must have been huge. Uncovered forward transactions already caused heavy foreign exchange losses for several other European and American banks recently. The Union Bank of Switzerland is reckoned to have lost some \$150m (some £65m); Westdeutsche Landesbank over \$100m and National Bank of New York nearly \$50m. The precise effect of Lloyds' loss on its published earnings this year remains to be seen. It should be entitled to full United Kingdom tax relief, which would reduce the net figure to under £16m, and may also be able to claim a special compensation under a fidelity bond underwritten with Lloyds of London. Lloyds' statement yesterday said the figures should be seen in the context of its pre-tax profits of £77.8m in the first half of 1974 and capital and reserves of £522m at the end of 1973. On the stock market, Lloyds Bank shares slumped 18p to 127p. Lloyds apparently received a strong hint that something was wrong at Lugano about two and a half weeks ago. Mr Colombo came to England and helped the bank reconstruct the records. Lloyds subsequently received Bank of England permission to unscramble the transactions and has since worked in close touch with the Swiss National Bank and Banking Commission. Lloyds Bank International, which is fully owned by Lloyds Bank, set up its Lugano branch about five years ago. It is the smallest of the bank's three Swiss branches. Financial Editor and Business Diary

Bonn leader in Paris for summit talks

From Richard Wigg
Paris, Sept 2
Herr Helmut Schmidt, the West German Chancellor, arrived here this evening and after driving to the Elysée Palace immediately began talks with President Giscard d'Estaing. In this third meeting between the French and West German leaders in just over three months the main subjects will be the French President's wish to inject new life into the EEC, and the joint steps which can be taken by the Europeans to overcome their present economic and financial difficulties. The talks will go on through dinner. Herr Schmidt is expected to leave for Bonn in the morning. Herr Schmidt telephoned the French President after his television broadcast last week and suggested the meeting to find out precisely what the measures were that M Giscard d'Estaing intended to propose on European monetary and economic union again. He is also thought to want to know what the content might be of the discussions envisaged by the French President among the leaders of the Nine on moving towards the realization of European political union. The French President's strategy is clear. He wants to seize the European affairs in the same kind of bold initiative at a difficult juncture that he has developed successfully in home affairs in his first three months. No statements are expected after the meeting and if any emerges it will be because the other EEC Governments have to be informed first. French comment today was heavily underlining the shadow of Britain over any kind of European initiative, both because of its present economic situation and because of the expected general election. France refused at the May leaders' first meeting in May an offer of massive financial assistance of the kind Herr Schmidt has just accorded Italy. But Paris remains attached to the idea of an EEC fund through a loan, possibly backed by the Arab nations, to overcome the oil balance of payments deficit problem. The French President will be anxious to hear from Herr Schmidt about plans to re-stimulate the German economy, which form an essential part of France's export drive plans. The French Government hopes the German Chancellor will be convinced that its anti-inflationary package has begun to bite. It is likely that the two leaders will study the European agricultural problem. They may search for common ground for significant reforms so as to avoid the continuing resort to national stop-gap measures.

'Le Monde' calls for Tory victory

Paris, Sept. 2.—British electors must vote Conservative at the general election, predicted for next month, if Europe is to move towards closer unity, the independent daily newspaper *Le Monde* said today. Commenting on President Giscard d'Estaing's call for a stronger Europe, *Le Monde* said: "No far-reaching action can be taken in the Community before the next British election. If Labour wins, the Community will continue to exist under a threat from the United Kingdom as long as London has not specified its terms of renegotiation and as long as the British people have not declared their belief in the Community." Until these matters were cleared up, the Community would live in doubt. *Le Monde* said: "As for the management and development of the Community, Mr Wilson, who does not seem to have a well-established European strategy in his head, will squeeze a few advantages for his country, notably in agricultural matters, and, as long as his past will carry on using this irritating tactic of unavowed obstruction which he has made his own." In short, those who still believe in Europe, whatever their own political leanings, have no other choice than to wish the Conservative Party success.—Reuters.



Lord Allen of Fallowfield, president of the TUC, telling delegates on the first day of the congress at Brighton yesterday that no government could take decisions any more without consulting the trade unions first (President's address, page 4).

More union support for social contract is isolating AUEW

From Paul Routledge
Labour Editor
Brighton
The campaign by trade union leaders to sustain the sagging credibility of the social contract between the TUC and the Government showed concrete results yesterday, but also suffered a setback. Unions representing more than 750,000 local government workers and miners declined to follow the militant Amalgamated Union of Engineering Workers (AUEW) into the anti-contract camp; and the Society of Civil Servants, a newcomer to the TUC membership which is not affiliated to the Labour Party, decided to reject the general council's new code for

collective bargaining, although the decision is unlikely to curtail political weight. Mr Gerry Gillman, general secretary of the society, said: "We are fearful of the impact of the social contract on Civil Service pay. We are worried that it could leave us lagging behind. We shall abstain." After a day of uncertainty and heart-searching among union delegations, it seemed clear that the engineers will be isolated with some "white-collar" unions from the mainstream in the debate on the social contract tomorrow. The delegation of the National and Local Government Officers' Association (NALGO), which might have gone against wage

restraint, and has a conference decision rejecting the social contract, voted 35 to 15 not to go along with the engineers. NALGO, which has been noticeably less moderate in recent months, and has no political ties with the Labour Party, is to support the general council's report *Collective Bargaining and the Social Contract*. So will the National Union of Mineworkers: its delegation voted 25 to 18 to go along with the council. The NUM also has a conference decision opposing an income policy, but Mr Lawrence Daly, its general secretary, will call for support for the social contract when he leads the debate tomorrow. Continued on page 4, col 2

Mass grave victims exhumed by Turks

From Our Correspondent
Nicosia, Sept. 2
Turkish soldiers with bandkerchiefs round their faces dug up decomposing bodies from a mass grave discovered in a rubbish dump in the Turkish Cypriot village of Maratha, near Famagusta, today. The Turkish Cypriot administration said the bodies, men, women and children, belonged to islanders captured and massacred by the Greeks, but the Cyprus Government claimed that evidence in their hands indicated at least one body was that of a Greek woman. The Turks said there might be as many as 90 bodies in the United Nations police on the scene since they had counted at least 21 skulls. The exhumed bodies were in such an advanced state of decomposition that many fell apart as Turkish soldiers lifted them with shovels. Mr Nihat Hassan, the Imam of Maratha, said the inhabitants of the village were massacred by gunmen from nearby Greek villages two days before the Turkish Army advanced to capture the area on August 16. "There were 93 souls in the village," he said. "Six of us are alive. The Greeks took 11 men as prisoners and we don't know what happened to them. All the rest may be in the grave." Two peasant women cried as they watched the soldiers dig out body after body from the mass of garbage. Mr Ahmet Sulleyman, aged 19, a Turkish Cypriot soldier, said he arrived at the village on Sunday to discover that his whole family, his mother and five sisters, were missing. "They all be in there," he said with a sob. The grave was discovered by Mr Kemal Mustafa, a 60-year-old Maratha shepherd, who said he hid in a cave for two days and nights after Greek Cypriot

gunmen went to the village on August 14. He said the Greeks came from the nearby villages of Pigi, Milea and Peristerona. "I know them," he said. "I recognized their voices, one is the baker and the other the constable. They rounded up all the women and children and took them away. I heard shooting." The Imam related a similar story. He said he hid in his cellar with his wife, son and daughter. "We covered ourselves with sacks and we stayed there for five days. I heard the Greeks say: 'Don't be afraid, we will take you to the Greek school and bring you home again.' Some of our children were laughing, they thought they were going for a walk. This is the second discovery of a mass grave in the same area. Two weeks ago the Turkish authorities took journalists to the nearby hamlet of Alos where they said there was a mass grave containing the bodies of 57 Turkish villagers. Journalists saw five bodies dug up. Commenting on the Maratha mass grave discovery, a spokesman for the Government of President Clerides noted that hundreds of Greek Cypriots were reported missing in the same area and their fate was unknown. The spokesman said that an article from the body of a woman from the Maratha grave showed she was a Greek, not a Turk. He did not identify the object, which he said was in Government hands, and did not reveal how it had been brought to the Greek side. The Maratha mass grave is the biggest substantiated atrocity brought to light in the aftermath of the Turkish invasion, during which both sides are constantly charging each other with countless killings, mass executions, rapes and lootings. Continued on page 5, col 5

Anger over Labour poster at Rome athletics

From Neil Allen
Rome, Sept 2
A poster proclaiming "Britain will win with Labour" was removed from the perimeter of the Olympic Stadium in Rome today on the first day of the European Athletics Championships, by order of Mr André Guillemin, Dutch chairman of the European Athletics Association. The poster, in clear black letters against a white background, was at the end of the back straight, just before the last turn of the track, where it could be clearly picked up by the BBC and ITV cameras as they made their daily coverage of the races. Before Mr Paulen, obviously furious at the intervention of politics into the sports arena, had ordered the advertisement to be removed it was in view during a heat of the 400 metres hurdles for men featuring Alan Pascoe, the former British athletics champion. Although the rules of the International Amateur Athletics Federation allow commercial advertising inside stadiums, the federation has as one of its prime objects "to strive to

ensure that no racial, religious, political or other kind of discrimination be allowed in athletics." Mr Paulen said: "This has no room in an athletics stadium and must be taken away at once." "Told it was all right": The poster was paid for by the Labour Party, which rented the stadium for the athletics. The Dutch chairman of the European Athletics Association, Mr Percy Clark, the party's director of publicity, said last night: "We were told by the contractors that it was all right after they had checked with the Italians." He would not disclose the cost of using one of the eight poster sites round the track. The idea was put forward by Special Police. The firm which had worked for Labour before, was a subsidiary of Associated Newspapers, Mr Clark added. British medals: Tony Simmons, of Britain, won a silver medal in the 10,000 metres, narrowly failing to catch Kuschmann, of East Germany. Joyce Smith also from Britain, won a bronze medal in the women's 3,000 metres. Games report, page 8

Mr Crosland backs Camden's compulsory purchase of Centre Point flats

By John Young
Planning Reporter
Mr Crosland, Secretary of State for the Environment, yesterday confirmed Camden council's compulsory purchase order on 36 two-bedroom maisonettes which form part of the Centre Point complex in London. The order was the subject of a public inquiry in January and February, at which the owners, Sovereign Investments Ltd, a subsidiary of Mr Harry Hyams's Oldham Estates, objected that the flats were unsuited to the council's needs and that the order was "influenced by prejudiced and partisan motives." It was said that the flats were too expensive for the council and that to separate

their ownership from that of the adjoining office block would cause severe practical difficulties. After being empty for nearly ten years since they were completed, the flats were leased to Brompton Securities last December. During this summer a number of them have been let to tourists on a short-term basis at rents reported to be more than £15 a day. In his report to Mr Crosland, Mr Peter Boydell, QC, the inquiry inspector, said that the two most important features of the case were that the flats had been empty ever since they were built and that tens of thousands of Londoners had no home of their own. He concluded that there was no compelling reason in law to withhold confirmation of the order and that the flats would make a direct contribution to the housing needs of the council, which had 2,470 families on its waiting-list for two-bedroom accommodation. Mr Boydell suggested that the likely cost would not be inacceptably high, but the council yesterday was unable to estimate what it might be asked to pay. At the inquiry a council official said that the flats could be let for between £10.63 and £11.81 a week, although earlier Camden's own counsel had put the economic rent at between £60 and £80.

Army defuses Bristol bomb

Army experts yesterday defused a parcel bomb sent to a Bristol electronics company. The bomb, which had a trigger mechanism made from a battery and an old watch, was big enough to kill a man, the Army said. It was wrapped in an Irish newspaper and was inside an electric iron box. The electric robot developed in Ulster was used to examine the parcel before the device was defused.

£200m oil pipeline

A single pipeline from five North Sea oilfields to Shetland will supply more than half Britain's oil needs by 1980. Seventeen oil companies are co-operating in a £200m pipeline project. Business News, page 15

Britain must curb pay or be beggar of Europe—Mr Thorpe

From Martin Huckerby
Brighton
A seven-point programme of social reforms needed if the country is to accept a compulsory policy on prices and incomes was put forward by Mr Thorpe, the Liberal leader, in Brighton yesterday. That prelection "mini-manifesto" was, he said, "the minimum necessary action to save the country from the perils of bankruptcy, poverty, and unemployment." He added that without some wage and price controls "this country will be the beggar of Europe." Speaking at Fishmarket Hard, Brighton, while the annual Trades Union Congress was meeting near by, he said the nation was living beyond its means, and was on its own. "Only our common endeavour, as a nation united in adversity, can save us." He was clearly pitching his arguments at the trade unionists in the Dome near by, hoping that such measures as this programme would encourage union leaders to restrain their wage demands and accept controls. His plan for action included: 1: Provision for the poor, with a guaranteed minimum wage of £25 a week. Otherwise "the long hard winter ahead will leave us with three or four million pauper families." 2: A pension tied to a percentage of the national average earnings: within three years he wanted to achieve 50 per cent of average earnings for a married couple, and 33 per cent for a single person; 3: Indexing of savings and equity bonds, to safeguard them against inflation; 4: New flexible mortgage schemes, to overcome the obstacles of increasing house prices and high interest rates; 5: Reappraisal of government investment in industry, with the Government working finance where investment in an industry would bring economic advantages to the nation; 6: Legislation to introduce partnership schemes in industry; 7: A complete overhaul of the social welfare system, eliminating means tests and duplication, with the long-term suggestion of a full-scale tax credit scheme. Mr Thorpe said that whether anyone liked it or not, the next Government would have to introduce a policy on prices

and incomes within the coming three months. The other party leaders ought to admit that, and should be preparing the measures necessary to gain acceptance for such a policy. Mr Thorpe gave a warning that if democratic leaders failed to take a grip on affairs, "there are other, less discerning, people who will move with more scruples about using more painful instruments of repression. We dare not allow them the chance." Mr Thorpe had planned yesterday to continue his craft electricity tour of Britain's beaches, but the jinx of his nautical endeavours struck again when gale force winds prevented him from using the craft. The Liberals are going into the election campaign in an unashamedly pro-European mood (a staff reporter writes). In a policy statement published today they reaffirm their belief not only that Britain must stay in the Community but also that there must be swift progress towards political integration, including direct elections for the European Parliament "at the earliest possible moment." They also emphasize that the Liberal Party remains committed to a monetary union with, as soon as feasible, a common currency. "But we agree that the time-scale seems lengthening and that 1980 is scarcely a practical date for complete monetary union to be achieved," the document says. It does not explicitly oppose the idea of a referendum on British membership of the EEC but it implicitly endorses the view which it attributes to the governments of the eight other member countries: "It was up to the British to work out their own method of consultation before ratification. They could have had a referendum as Denmark and Ireland did. They chose not to." The Liberals support some of the changes the Government is seeking through renegotiation—notably reform of the common agricultural policy—but say that "in order to achieve them there was no need to raise the question of withdrawal." Text of speech, page 4
Leading article, page 13

Dock ban on export sugar load

From Our Correspondent
Hull
Dockers at Hull are refusing to load a consignment of sugar for export in protest against the shortage on the home market. The sugar, 60 tons in hundred-weight bags, is in a quayside shed on the port's King George Dock, waiting to be loaded into a cargo vessel registered in Liverpool, for the Red Sea port of Jiddah, Saudi Arabia. The Hull and Humber Cargo Handling Company said the dockers had not yet been asked to load the sugar, but Mr Tony Fee, a dockers' shop steward,

said the men would refuse to do so when asked. Mr Fee said he had sent a telegram to Mrs Shirley Williams, Secretary of State for Prices and Consumer Protection, telling her that the sugar had been "impounded" by the dockers and asking her to divert it immediately to the home market to stop the exploitation of housewives. He understood that the owner of the sugar, a London company, was exporting 1,500 tons a week, and that four lorry loads of sugar bound for Hull had been diverted to Immingham because of the dockers' decision. In a letter to the Prime Minister Mr Michael McNair-Wilson, MP for Newbury, said that the sugar shortage seems to be getting worse, "which is a very different situation to the one outlined in a letter to me from the Parliamentary Secretary at the Ministry of Agriculture on August 16 in which he suggested that supplies to the retail trade would be significantly better by the end of October. Clearly he was mistaken." "I think the nation deserves an immediate statement about the adequacy of sugar supplies this autumn and winter."

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Day 3 Martinique: laze on a private beach

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HOME NEWS

International control of research safety standards urgently needed, Nobel Prize winner says

From Pearce Wright Science Correspondent Stirling. The state of research into genetic engineering techniques was likened yesterday by Sir John Kendrew, FRS, giving the presidential address to the British Association for the Advancement of Science's meeting at Stirling University, to the situation in nuclear physics 35 years ago when it was common knowledge among physicists in many countries that the discovery of nuclear fission might make it possible to develop a new source of power or to construct an atomic bomb.

their genetic material. Scientists have used this natural occurrence to develop techniques for investigation into the basis of genetics. The new situation described by Sir John has come with the discovery of how to carry out such transfers artificially under controlled conditions. It thus became possible to isolate genes from the chromosome of one organism and transfer them to another in order to produce a predetermined characteristic. It has been done with simple organisms already. The potential medical applications for such processes on the human scale are obvious to those suffering from genetic deficiencies. Although the present state of knowledge makes it possible in principle to transfer genes there are enormous difficulties. There are many different genes in a single animal cell, and Sir John described the isolation and removal of a particular one as like looking for a needle in a haystack. However, microbiological techniques are improving very rapidly. He said: "What is difficult today may be easy in a few years time."

He likened this situation to that in nuclear physics. The present problem seemed more difficult for a number of reasons. The possible consequences of developments in nuclear physics were easier to predict in 1939, than were the possible consequences of gene transfer in 1974. Owing to the war, nuclear research was carried out entirely within a military framework and was in fact contained within that framework. Gene transfer is more difficult to handle because there is no ring-fence to contain it. The research can be done by competent people in any laboratory. Furthermore, besides the medical uses, there may be commercial applications and possibly also military ones which increase the spread to terms of number of people and laboratories doing research. He maintained that carrying out some of the work behind a cloak of military or commercial secrecy, perhaps in several countries, would be doubly dangerous. He outlined some action which was being taken. A distinguished group of American biologists had previously proposed a voluntary moratorium on experiments throughout the world until the dangers could be more fully discussed. In Britain the Medical Research Council has called for a moratorium and the Government recently asked the advisory board of the research council to carry out an inquiry under Lord Ashby. But more was needed. What was needed was a permanent international monitoring body. That body should be international because experiments could be carried out anywhere and there was no time to wait until national control was set up in every country. The only conceivable effective form of control would be a self-imposed one by specialists working in that subject. Sir John said: "In the gene transfer story we have a clear case where, until it is proved otherwise, it may be positively dangerous to continue certain lines of research. It may lead us to question scientists' common and generally unspoken assumption that the acquisition of new knowledge is always an absolute good, requiring no justification, no ethical sanction." Leading article, page 13



The first squad of woman detectives for Surrey. They are, from left, Gwen Crossman, Mary Dobson, Clare Weedon, Pam Sweetman, Marilyn Fisher, and (rear) Nancy Faulk.

Police chief gets writs over pop festival

Mr David Holdsworth, Chief Constable of Thames Valley police, was served yesterday with three writs for damages arising from the Windsor pop festival. Miss Diana Senior, aged 29, a teacher, is claiming £30 damages alleging the loss of a substantial bank of hair and a severe headache. She alleges that she was assaulted by an agent of Mr Holdsworth while playing Tibetan bells in a peace-inducing manner. Mr Nicholas Albery, a youth worker, is claiming £50 for "a bloody nose, sore teeth and a complete lack of faith in the so-called forces of law and order". His claim alleges that Mr Holdsworth created a riotous situation and disturbed the peace by instructing hundreds of agents to clear the festival site in Windsor Great Park.

Jail and bans for rowdy football supporters

Prison sentences, bans on attending matches, and fines were imposed by magistrates yesterday on football supporters in various parts of Britain. At Hove, Sussex, two Crystal Palace supporters were jailed for six months for inflicting grievous bodily harm on a policeman. Mrs Olive Dingwall, chairman, called them football parasites. Roger Poole, aged 20, a warehouseman, of Colliers Water Lane, Thornton Heath, and Gene Roudaux, aged 23, a metal polisher, of Batterley Road, Battersea, London, both pleaded guilty to inflicting grievous bodily harm on Det Constable John Atkins. Mr Adam Proud, for the prosecution, said the two men

were among a group of supporters outside a public house near the Brighton and Hove Albion ground on August 17. Shortly before the match against Crystal Palace they hit Mr Atkins as he was about to arrest a youth who had thrown a glass at his car. Both Mr Poole and Mr Roudaux kicked Mr Atkins when he was on the ground. His nose was broken and he was still unable to breathe properly. They were ordered to pay Mr Atkins £23 for damage to his clothing. At Bristol Juvenile Court, three boys aged 15 were ordered to miss Saturday afternoon football matches for 12 weeks. The three, all from the Avon area, had admitted using insulting words during the Bristol City and Cardiff match a fortnight

ago, when 137 supporters were arrested after the match. At Birmingham Magistrates' Court, two supporters were fined amounts ranging from £30 to £100 for threatening behaviour at the Birmingham City ground on Saturday. The situation was described by a policeman as the most explosive he had seen in 23 years in the force. The fines totalled £635. In the city's juvenile court three boys aged 16 admitted using threatening words or behaviour. One was ordered to pay £25, another £20; a third was ordered to go to an attendance centre for six Saturday afternoons. A fourth 16-year-old admitted a disorderly act after the match and was ordered to pay £10.

Manchester United was asked yesterday to pay for damage that the club's supporters caused to houses in Cardiff on Saturday. Mr Genrae Thomas, MP for Cardiff, West, has written to Mr Tommy Docherty, the United manager, contending that it is the club's responsibility to pay for the damage. South Wales police said that 41 of the 55 people arrested at the match were from South Wales. Only nine came from Manchester. Twenty-five of the 55 were juveniles, and charges varied from possessing offensive weapons, assaulting the police, wounding and causing criminal damage. All were granted bail to appear in court later.

Mr Heathcote Williams, aged 33, a playwright, is asking for £35 damages for loss of a sleeping bag, shock and bruising. His claim alleges: "While peacefully meditating on the Holy Name of God, I was assaulted from behind by an agent of the defendant who carried me off by the nose." The three all come from the Alibon free state commune in Westbourne Park Road, North Hill Gate, London. The writs were issued at Slough County Court and served by bailiffs at police headquarters at Kidlington, Oxfordshire. Mr Holdsworth has 14 days to decide whether to contest the action. A preliminary hearing will be at Slough County Court on October 10. Mr John McKenzie, the three plaintiffs' legal adviser from a group called "Up Against the Law", said hundreds more writs might be taken out against the chief constable. The Release organization was assembling photographs and film of the police occasion and had appealed for witnesses.

Five jailed for Leeds prison corruption

Three prison officers and two prisoners who were involved in smuggling goods into Leeds prison were given jail sentences at Leeds Crown Court yesterday. Donald High, aged 40, a prison officer, instructor at Gloucester Terrace, Leeds, who admitted two charges of corruptly accepting a total of £30, was jailed for 21 months. Frank Lickley, aged 56, a prison officer, instructor, of Clyde Chase, Leeds, who admitted corruptly accepting £20, was jailed for 12 months. Geoffrey William Arundale, aged 31, a prison officer, of Cockshot Drive, Leeds, who admitted corruptly accepting £20, was jailed for nine months. Ronald Ambler, aged 48, a prisoner, who admitted three charges of corruptly making gifts totalling £50, was jailed for two years to follow a sentence of two and a half years he is already serving. Neville Anthony Hargreaves, aged 35, a prisoner, who admitted a charge of corruptly giving £20, was jailed for 21 months to follow the three-year sentence he is now serving. Mr H. G. Hall, for the prosecution, said: "As a result of the gifts to the prison officers, tobacco, spirits, other goods and two backwash blades were smuggled into the prison and given to the prisoners. Investigations began on January 15 when a prison officer found a window bar of a cell almost cut through. Judge Dean, QC, told Mr Hargreaves and Mr Ambler: "I think you were the runners and errand boys for even more sophisticated criminals." He told the prison officers: "What you did enabled the worst elements in the prison to get hold of goods, and in particular tobacco, which they could, and I have no doubt did, use to enhance their own power over weaker prisoners. "Once you had submitted and succumbed to the temptation, you became tools in the hands of those who put the temptation there and they made you liable to a very insidious form of blackmail."

Former mayors for trial accused of conspiracy

From Our Correspondent Wakefield. Four men, two of them former mayors, appeared at Pontefract Magistrates' Court, West Yorkshire, yesterday, on conspiracy charges in connection with the Poulson affair. All asked for reporting restrictions to be lifted and through their solicitors said they were innocent of any criminal offence. They are Roy Hadwin, aged 49, a former Lord Mayor of Newcastle upon Tyne, of St Thomas Square, Newcastle; Peter Ward, aged 49, of Old Orchard, Rothbury, Northumberland; Colin Dewis, aged 64, of Glebe Street, Castleford, West Yorkshire, former Mayor of Castleford and now chairman of Wakefield District Council education committee; and Tom Roebuck, aged 49, of Elm Road, Mexborough, South Yorkshire, a member of Doncaster District Council. All were committed on bail for trial at Leeds Crown Court. Mr Hadwin and Mr Ward are charged with conspiring with T. Dewis Smith and others to seek out members of local authorities who might be prepared for reward or the promise of reward to show favour to Open Systems Building Ltd, and John Poulson, in relation to council building projects. They are also accused with Mr Dewis of conspiring with Mr Smith and others that Mr Smith would procure payment to Mr Dewis, a member of Castleford Borough Council, for favour shown or to be shown by him to Open Systems Building in relation to council building projects. There was a similar charge against Mr Hadwin, Mr Ward and Mr Roebuck in connection with Mr Roebuck's membership of Mexborough Urban District Council.

Mrs Castle accused over family allowance delay

By Our Social Services Correspondent. Mrs Castle, Secretary of State for Social Services, was accused yesterday of using "utterly unconvincing" administrative reasons for delaying the extension of family allowances to the first child until 1978. All political parties were committed to the reform. Sir Brandon Rhys Williams, Conservative MP for Kensington and chairman of the Family Allowance Movement, said yesterday. Yet Mrs Castle was making difficulties about getting the forms printed, finding office space and recruiting staff. More than seven million children do not benefit from family allowances because they are the first or only children in their families. The movement, formed last month by several children's and poverty groups, wants family allowances extended to them next April. In a letter to Sir Brandon,

HP-45 Doubles the power in your pocket

The era of the advanced pocket calculator began when Hewlett-Packard introduced the revolutionary HP-35. Now the pioneer is joined by an even more advanced pocket calculator, offering even more power, more functions, more performance—the HP-45.

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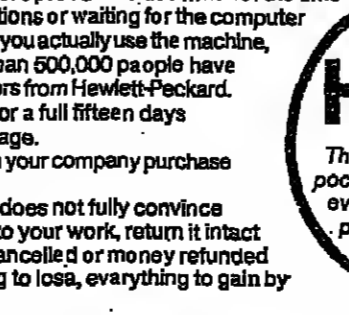
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Pharmacists' plan to cut waste of tablets

From John Roper Medical Correspondent Nottingham. A system of repeat prescriptions, which it is hoped, will cut the quantity of medicine issued to a patient at one time, is likely to be brought in soon, after a meeting of doctors, chemists and Department of Health officials. Mr Charles Stevens, in his presidential address to the Pharmaceutical Society annual conference at Nottingham yesterday, said the scheme should eventually spell the end to all mangled medicine cabinets in the land. The doctor would still be able to prescribe whatever he wished, but instead of sending a patient to collect, say, a hundred or more tablets, he would be able to regulate the issue of the total quantity over a month or more. The patient would still make only a single payment as at present. The scheme would reduce the threat to public safety from large quantities of tablets being kept in a house, and unused tablets put away and forgotten. It would cut waste where treatment was changed before all the medicine had been taken. Pharmacists would like to see a phased introduction of the scheme begin within six months. If it were put into operation in one health authority's area the practical problems could be seen and evaluated. The decision lies

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HOME NEWS

Thorpe plan to rescue Britain with minimum pay as price of wage control

Britain, with debts accumulating at £4,500m annually, is on her own and can be saved only by unity in adversity, Mr Thorpe, leader of the Liberal Party, said yesterday. Speaking in Brighton, he said: "The message which I bring to the people of this country is that we are in a crisis. It is vitally necessary that we should all be aware of the grave dangers to our economy and democracy which together we must overcome if this country is to survive."

The stark facts are that we are living beyond our means, the Government is borrowing far more than it can ever hope to repay; our debts are accumulating to the tune of £4,500 million annually and there is no single panacea which can rescue us. We are on our own and only our common behaviour, as a nation united in adversity, can save us.

How are we to achieve this unity of purpose? Only by squarely recognizing our problems. Some politicians would have us believe that all is well and there is no crisis. All is not well, and they know it. Wherever I go I find people who accept the realities of our situation.

They are not involved in the intricacies of budget-balancing but they see the danger when inflation erodes their purchasing power by 20 per cent a year; when the country is constantly crippled with debilitating strikes over exorbitant wage claims; when the Stock Exchange is lower than 30 years ago and firms which represent all that is best in British craftsmanship lie on the brink of bankruptcy.

The British people will not be put off with denial, empty promises of good times to come, or by frankly devious attempts to play off one section of the community against the other. This crisis is real and nothing will be gained by trying to sweep it under the carpet with a general election.

I recall a worthy leader, who, as Prime Minister, delayed necessary measures of rearmament until we were on the brink of war with Nazi Germany for which we were ill prepared. In his defence, he later claimed that to preach rearmament to a pacific country would have had disastrous electoral consequences.

queous for his government. That was Stanley Baldwin. I hope that no leading politician in this country will be deluded into playing the same game at the expense of our economic future. We must take action now. The first thing to do is to end the shilly-shallying over a statutory prices and incomes policy. Why does Mr Wilson say that he will not consider one and Mr Heath grudgingly admit that it is a possibility of last resort? Whether anybody likes it or not, the next government will have to introduce such a policy within the next three months. I suggest that the other party leaders should come clean with the electorate and tell them this. For unless they do so, and prepare the measures necessary to gain the acceptance of the whole nation for this policy, it will be doomed to failure.

The attempts by Labour and Conservative governments in 1967 and 1971 were shock therapy and failed because there was no attempt made beforehand to gain national acceptance. To ensure that this is not a re-run, a programme of social reforms is necessary, including the following seven points which must be nothing short of a social compact between the people of this country and the government of the day.

1. A minimum wage for the poor—the 4,500,000 working people who earn less than £25 a week. I want statutory minimum earnings corresponding to two-thirds of the average weekly earnings. A three-year period, starting immediately. It means a guaranteed wage of £25 for a normal working week. A 1 per cent a year increase in the national wage bill and a corresponding cut in the expenditure of above-average wage-earners. Unless we do this, the long, hard winter ahead will leave us with three or four million pauper families.

2. I want an immediate commitment from the Government to the basic state pensions to a stated percentage of national average earnings as an automatic index against inflation and to ensure that pensioners are not left behind in the wage race. In my view the target to be achieved, again over a three-year period, is 50 per cent of average earnings for a married couple and 40 per cent for single people. Present rates this would be £21 and £14 respectively. It will cost £1,400m, which must be raised through fully graduated social

security tax—representing the present contributory system, which exempts far less, proportionately, from the high income group than the low-paid and self-employed. 3. The introduction of savings and equity bonds against inflation to protect these deposits and encourage greater investment. This should be accompanied by a far greater degree of austerity and care in the deployment of public money. 4. The introduction of new flexible mortgage schemes, particularly to help the first-time buyer to overcome the twin problems of escalating house prices and high interest rates. I want to add to fiddling with the market and to stoking inflation through subsidizing the building societies. We should be far more selective in the money which we hand out for house purchase. It should go to people, not institutions. 5. A careful reappraisal of the prospects for investment with the Government through the NEDC (National Economic Development Council) initiating a series of consultations with major industry. Where the economic advantages to the nation would be enhanced by investment in certain industries, the Government should be prepared to underwrite the necessary finance for a limited period. 6. A commitment in legislation, in the next session of Parliament, to restructure industrial relations on a partnership basis. The legislation should be mandatory and indicative, rather than specific. 7. A further commitment radically to overhaul our social welfare system to eliminate means tests and unnecessary duplication between the Inland Revenue and the Department of Health and Social Security. My preference is for the introduction of a full-scale tax credit scheme which would include allowances for tenants and house buyers alike. I acknowledge that this will take time to implement, which is why we must protect the low income families with other guarantees in the next three years.

These seven policy points constitute the minimum necessary action to save the country from the perils of bankruptcy, poverty, and unemployment, and to gain the necessary consent for the introduction of a compulsory prices and incomes policy, with tax sanctions against those who attempt to break the policy of restraint. Time is short and the country is waiting for someone to take a grip on its affairs. If our democratic leaders fail, there are other, less discerning individuals, who will have no scruples about using more painful instruments of repression. We dare not allow them the chance. It is time for action.

TRADES UNION CONGRESS

Civil servants' leader threatens industrial action as unions vote to campaign against private agencies

From Our Parliamentary Staff Brighton A composite motion calling for a campaign to end the use in the public service of staff recruited from private fee-charging employment agencies was carried without dissent on the opening day of the Trades Union Congress in Brighton yesterday. MR WILLIAM KENDALL, general secretary of the Civil and Public Services Association, said that in two weeks his members, particularly in London, would start industrial action intended to stop the employment of such staff in the public sector (cheers). Governments had done nothing effective, he said, to curb the agencies' activities. The motion reaffirmed the trade union movement's opposition to private fee-charging agencies, deplored their "parasitic nature", and recorded concern at their effect in undermining union bargaining strength.

It also expressed concern at the ineffectual nature of the Employment Agencies Act, a private member's measure, and called for fresh legislation to comply with the International Labour Organization's convention on abolishing agencies. It asked the general council to use TUC industrial committees and to create ad hoc machinery for the public sector to end the employment of agency staff in the public service. MR GLYN LLOYD, of the Union of Construction, Allied Trades and Technicians, who moved the motion, said that the fee-charging agencies worked on the principle of "here today and gone tomorrow". Collective bargaining meant nothing to agency staff, and good industrial relations could not be maintained in the building industry when directly employed craftsmen received far less than those using the services of agencies. The trade union movement was resolutely opposed to the continuing existence of the agencies and they would no longer tolerate them living off the backs of the people the movement represented.

Mr Kendall said that the draft regulation Mr Foot, Secretary of State for Employment, had presented to the general council as a "reasonable alternative" to abolition of the agencies was nothing of the sort. He believed Mr Foot's action to be a margin perversion of understanding rather than a deprivation of heart. The employment service was a social service which it was not safe to entrust to private enterprise. Dealing in human bodies continued to be as attractive as in the days of the slave trade, and

it was no wonder that the number of agencies was about 3,000. Agency staff made no contribution to the organized trade union movement. Miss Audrey Price, of the National and Local Government Officers' Association, said that her union's main objection to the agencies was that they undermined the state employment service, which was being reorganized. It was essential that the manpower Commission, to which the service was to be transferred, should operate efficiently. That would be possible only if the private agencies were abolished. Mr E. Dix, of the National Union of Public Employees, said that the Federation of Parliamentary Press released a showing that a socially useful service private agencies were doing, particularly in the National Health Service.

Most agency employees were in the "push" teaching hospitals, he said. How many agency staff did not see their own and psychiatric hospitals? Mrs Christine Page, of the Union of Shop, Distributive and Allied Workers, said that half the 3,000 agencies were not even covered by their own professional employers' organizations. These were the ones most likely to deal in "junk labour". The agencies' total turnover was about £5m a year and employed about 50,000 in the winter and 80,000 in the summer. Last year, two fifths of all office staff was placed by agencies, as compared with 7 per cent placed by the employment service. Her union was opposed to the agencies because they were inflationary. Diary, page 12. Leading article, page 13.

Farmers' leaders call on Mr Peart to take steps to relieve livestock producers

By our Agricultural Correspondent Steps to relieve the difficulties of livestock producers were urged by leaders of the three United Kingdom farmers' unions when they met Mr Peart, Minister of Agriculture, Fisheries and Food, and Mr Hugh Brown, Parliamentary Under-Secretary at the Scottish Office, for two hours at the ministry in London yesterday. The farmers' leaders warned Mr Peart that the substantial fall in spendable farm income forecast for the current year would have a very serious effect on farmers' ability to meet home food demand. Decisions were needed now to deal with the crisis in milk, livestock and poultry production.

Sir Henry Plumb, president of the National Farmers' Union of England and Wales, said afterwards: "Our best estimates indicate that unless action is taken, spendable farm income will fall by about 50 per cent in the current year and a far greater fall will result in the livestock sector. This will take the farm income situation back to the depressed level of the late 1960s, and in real terms the loss would be substantially greater in view of the fall in the value of money during the past five years." The cut in production already shown in a number of sectors would extend further, affecting consumers as well as farmers, farm workers and workers in related industries. The danger could be averted only by a substantial cash injection this autumn. The minister said he recognized the importance that the farmers' unions attached to action during the autumn, but he hoped this would be possible at the meeting of European Economic Community farm ministers in Brussels today to clear the ground for further decisions by the Council of Ministers on September 23 and 24. Among points pressed by the unions was an increase in the guide price for beef to take account of the true value of the pound relative to the ECU unit of account; the present scheme of direct payments should be replaced with further supplementary payments if producers' average returns fail to reach the adjusted intervention price. They called on the minister to make clear in Brussels that the best support system should be overhauled for next year with the institution of a

premium payment scheme, reinforced by guaranteed minimum prices in countries that did not wish to implement intervention. There should be a substantial immediate increase in the guaranteed price for milk direct payments for pigs must be extended, and the real value of the pound must be used in determining those payments. They also pressed for some protection of the egg market from imports at unduly low prices from the Continent, particularly France, which excluded our egg exports, and asked for consideration of a system of headage payments to producers to meet their immediate problems. Orkney "crisis": Mr Grimond, Liberal MP for Orkney and Shetland, and Mr Jack Tait, president of the Orkney National Farmers' Union, sent a telegram to Mr Peart yesterday saying: "Urge realistic guaranteed prices be introduced at once. Crisis in Orkney and Shetland. Fat cattle around £16 and sheep £10. No sale for Shetland lambs to Aberdeen" (our Orkney correspondent reports). Mr Grimond said: "I was at the Kirkwall mart this morning, where prices for fat cattle were over £2 below the guaranteed minimum set by Mr Peart himself."

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Faces at the congress yesterday: From the top, Mr Len Murray, TUC general secretary; Mr Richard Brightsbaw, of Natsofa; and Sir Sidney Greene, of the railwaymen; Mr Alan Sapper, of the cinematograph technicians; and Mr Kenneth Gill, of the engineering workers.

Concern over shortage of trained workers

Mr Leslie Buck, secretary of the National Union of Sheet Metal Workers, Copper-Smiths, Heating and Domestic Engineers, expressed concern that the future expansion of industry might be adversely affected by the shortage of trained workers. He moved a motion, which was agreed, calling on the TUC to press the Government to restore the principles of industry's commitment to training contained in the 1963 Training Act and calling for greater involvement of workers' representatives in the creation and development of training at the work place. There should also be a right of all workers to day release for training and further education and a re-examination of training in employment had day release, compared with 29.7 per cent for boys. Only 7 per cent went into apprenticeships compared with 42 per cent of boys.

ment's document, Training for the Future, and the Training and Employment Act. That legislation had seriously affected the programme laid down by the training boards. Employment difficulties in recent years had sharply affected the attitude of employers to training and there had been a notable fall in the number of apprentices and other people taken into training. That should be looked at by the Manpower Services Commission as the difficulties would affect it in the future. Dr Judith Gray, of the medical practitioners section of the Association of Scientific, Technical and Managerial Staffs, said only 10.4 per cent of girls in employment had day release, compared with 29.7 per cent for boys. Only 7 per cent went into apprenticeships compared with 42 per cent of boys.

Motion to abolish women's conference defeated

A motion to abolish the TUC Women's Conference was lost after a show of hands. The motion, moved by Mr Jerry Gillman, general secretary of the Society of Civil Servants, said that the continuation of a separate representative body for women within the TUC was an anachronism. The difficulties facing women workers would not be solved by a right degree of priority until they were seen as those of workers and not merely of women. Mr Gillman said that the quality of debate and standards of thought at the women's conference should be brought to the congress. Mrs Margaret Morrison, of the Civil Service Union, said the women's conference was an ideal training ground for women new in conferences and committees. It provided a good sounding platform for women's views. Mrs Shirley Miles, of the technical, administrative and supervisory section of the AUEW, said it would be wrong to abolish the separate rights of women in the TUC. Mrs Marie Patterson, chairman of the women's advisory committee and chairman of the women's conference, said that the women's conference in 1972 and 1973 had defeated attempts to abolish the conference. She did not believe in giving up anything until she was sure it was going to be replaced with something better. The congress adjourned until today.

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AUEW 'cash difficulties'

From Raymond Perman Labour Staff Britain's second-largest trade union, the Amalgamated Union of Engineering Workers, is facing financial difficulties according to one of its most senior executive council members. Mr John Boyd says that the union's assets have dropped from £1m to less than £11.75m at the beginning of this year and that arrears in subscriptions now amount to £2m. Mr Boyd, champion of the right wing and a bitter anti-communist, is one of the two

leading contenders for the post of general secretary of the union. He makes his points in an election address to members of the engineering section. His main opponent is Mr Bob Wright, a left-wing member of the Labour Party who claims the support of 41 national and local officials of the union. In his address he says he will pursue democracy within the union and seek to make it another running. The post of general secretary has been vacant since the death of Mr Jim Conway in the Paris air crash earlier this year.

Tories will back independent aero industry

By Arthur Reed Air Correspondent On the eve of the visit to the Farnborough Air Show today of Mr Benn, Secretary of State for Industry, Conservatives came out strongly against the proposed nationalization by Labour of the British aircraft industry. Mr Kenneth Warren, chairman of the Conservative parliamentary aviation committee, and Mr Eldon Griffiths, shadow Minister for Trade, in a letter to Sir Harry Broadbent, president of the Society of British Aerospace Companies, said: "All experience shows that nationalization would not improve the industry's efficiency or level of production, but that it would blunt its competitive edge. "Nationalization would add enormously to the taxpayers' expense, while providing no more security whatsoever for the industry's work force." The letter said that a Tory government would stand by the industry in honouring its export contracts. It would seek to improve the use of the government research establishments to advance the state of the art in British aeronautical engineering, and in particular it would encourage a big effort to reduce aero-engine noise. "Too many people have suffered far too long from noisy aircraft. We are confident that Britain's aeronautical scientists and engineers can meet this challenge quickly", it said. Mr Benn is due to tour the Farnborough Show this morning and will fly to the Lockheed P-70 Star aircraft powered by the Rolls-Royce RB211 engine.

Resolution lists conditions for wage restraint

Continued from page 1 The general council yesterday nodded through resolutions on economic policy and the social contract, and decided without a vote to recommend delegates to reject militancy. A decision was taken with the AUEW leaders present, but they did not speak. It suggests that the AUEW will be supported only by Civil Service unions with a combined membership of about 200,000 and a few other white-collar unions, including the journalists. Mr Wilson will thus be able to claim on Thursday, when he addresses the congress that the unions accept voluntary pay restraint in a ratio of about four to one. After the psychological shock of the engineers' decision it appears that a reaction has set in. Even the militant train drivers' and the Association of Scientific Technical and Managerial Staffs (ASTMS) have besitated over the issue and will not make up their minds until today or at the end of the debate. Others, like the agricultural workers are taking the classical trade union way out, of voting for everything. An attempt by Mr Jack Jones, general secretary of the Transport and General Workers' Union, to get the engineers to reconsider their line got nowhere yesterday. The AUEW leaders, traditionally train drivers' and the Association of Scientific Technical and Managerial Staffs (ASTMS) have besitated over the issue and will not make up their minds until today or at the end of the debate. Others, like the agricultural workers are taking the classical trade union way out, of voting for everything. An attempt by Mr Jack Jones, general secretary of the Transport and General Workers' Union, to get the engineers to reconsider their line got nowhere yesterday. The AUEW leaders, traditionally train drivers' and the Association of Scientific Technical and Managerial Staffs (ASTMS) have besitated over the issue and will not make up their minds until today or at the end of the debate. 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WEST EUROPE

French Government seeks public's help to fight price rises

From Richard Wigg Paris, Sept 2. M. Fourcade, the Economics Minister, today launched a campaign to persuade the Government's instrument to mobilize public support in combating rising prices. It represents the popular propaganda arm of the Government's anti-inflationary package...



Tractors in the streets. This demonstration in Brussels yesterday was typical of protests all over Belgium as farmers demanded higher prices for their products.

Favourable EEC response to Greek overture

From Roger Bertoud Brussels, Sept 2. The European Commission has responded favourably to the Greek Government's formal request of last week for closer links with the EEC. With relations between Athens and Washington reaching new depths...

New farm protest in Belgium

From David Cross Brussels, Sept 2. Belgian farmers are keeping up their pressure on EEC member governments for an immediate big increase in Community farm prices. An estimated 20,000 of them took to the streets on their tractors today to air their grievances...

Sweden to give 1 per cent in aid to underdeveloped

From Our Correspondent Stockholm, Sept 2. The Swedish International Development Authority today unveiled an ambitious foreign aid programme for the next budget year which would amount to at least 1 per cent of Sweden's gross national product (GNP)...

Mutiny in Bonn jail over tasteless Sunday meal

From Dan van der Vet Bonn, Sept 2. A sub-standard Sunday dinner led to a mutiny in Bonn prison which lasted until the prisoners received a cooked meal. Officials confirmed today that at least 15 of the 286 prisoners serving sentences or awaiting trial are known to have been involved in the disturbances...

Paris placates farmers in Corsica

From Our Own Correspondent Paris, Sept 2. The French Government hoped today to three days of disturbances by Corsican farmers. Meeting in Paris under M. Chirac, the Prime Minister, an interministerial committee approved immediate relief measures for the Mediterranean island. Today the Government decided to implement the promises M. Messmer made when he visited the island last February...

Fascist salutes at Borghese burial

From Patricia Clough Rome, Sept 2. Prince Junio Valerio Borghese, the war hero who was alleged to have headed an abortive Fascist plot in 1970, was today laid to rest after an impromptu and enthusiastic "funeral procession" by sympathizers amid Fascist salutes and cries of "Italy, Italy, Fascism, Fascism". The rest of Rome remained indifferent and few people stopped to watch as several hundred people—leaders of the neo-Fascist Movimento Sociale Italiano, Roman Fascist functionaries, former Fascist veterans and tough looking youths with motor cycle helmets—gathered in the basilica of Santa Maria Maggiore for the brief ceremony. Vast deployments of police and anti-terrorist experts, both in plain clothes and full riot gear, surrounded the basilica, but did not intervene.

OVERSEAS

Addis Ababa crowds quietly watch marchers calling for the Ethiopian Emperor's removal

Addis Ababa, Sept 2.—Demonstrators carrying placards and demanding the abdication of Emperor Haile Selassie paraded along a main street of Addis Ababa today. The demonstrators—several dozen students, unemployed men and some children—called for the "dismissal" of the Emperor. Some demonstrators shouted that he should be hanged. It was the first demonstration against the Emperor personally since the armed forces had begun their quiet revolution six months ago.

Hurricane threat to British colony

Belmopan, Belize, Sept 2.—Hurricane Carmen, with winds up to 175 mph, today bore down on this British colony in central America, sending residents fleeing to the inland capital of Belmopan. Belize city, wrecked by Hurricane Hattie in 1961, was battered down and shelters filled up with a stream of people carrying children, bedding, pots and pans. Today's first winds hit the northern coastline of Belize—formerly British Honduras. The weather bureau said Hurricane Carmen was centred on the town of Corozal and the village of Steneja, some 100 miles north of here. Belize city, with a population of 40,000, and other thickly populated areas appeared likely to escape the hurricane's full force as the storm swung northward overnight; but the weather bureau gave a warning that Carmen was expected to survive its overland trip to the Bay of Campeche, off Mexico, and redevelop later today. Emergency headquarters advised people to stay in hurricane shelters, and search and rescue teams stood by. Tokyo, Sept 2.—Typhoon Polly raced up the Sea of Japan today and threatened the northern island of Hokkaido after cutting a swathe of destruction across the western part of the main island of Honshu. Police said five people were killed and eight were missing in western Japan since the storm hit yesterday. Another 41 people were injured and 38,000 homes temporarily flooded, according to officials. The weather bureau said the storm, with heavy rains and winds up to 122 mph, would hit or pass close to the Shikoku peninsula on the north-east side of Hokkaido.—UPI.

Police said to have shot Allende men

Washington, Sept 2.—Two supporters of the former President Allende were shot dead after being detained by Chilean police near Santiago, The Washington Post reported today. The two men, one a doctor, were the victims of a shooting which appeared to be the first summary executions in Chile since the military junta that overthrew President Allende last September ordered an end to such killings earlier this year, the newspaper said. It also reported that Mr Joseph Novitski, the correspondent who wrote the article describing the shootings, was temporarily placed under house arrest in Santiago after the authorities learnt that he was preparing a dispatch about the shootings. As a result the newspaper withheld publication of the article for two days. The military authorities have ordered an investigation into the deaths, but the Chilean newspaper said that the military authorities have not published any announcement of the investigation, according to the article. In the months immediately following the anti-Allende coup, there were reports, some of them documented, of large-scale executions of Allende supporters. The junta earlier summary this year prohibited executions and some death sentences passed by military courts have been commuted.—AP.

Palestinians tell US they want talks

Cairo, Sept 2.—The Palestine Liberation Organization has communicated to the United States its readiness to have direct high-level consultations with American officials on the Palestine problem, a source close to the PLO said today. The only condition the PLO attaches is that the meetings be publicized and not held secretly, the source said—as has been the case with the Soviet Union. The PLO communicated with the United States through "third parties" including Arab, Asian and African countries "which enjoy a good standing in Washington". The first approach was about a month ago and a second was made last week. It is the first time the PLO has taken definite action for direct contact with the United States, the source said. There had been no definite response from Washington so far, but first indications were that the Americans would prefer any meetings to be secret—most likely for fear of possible repercussions in Israel. Mr Yessir Ararfat, the PLO leader, has been to Moscow several times on official visits, and the source said that one possibility the PLO had in mind was a meeting between him and Dr Henry Kissinger, the Secretary of State, when the latter visits the Middle East later this year. A primary PLO concern would be to explain its position that the Palestinian problem should be treated as a national cause and not a refugee question, and American acknowledgment of this would encourage the PLO to take part as a separate entity in the Arab-Israeli peace conference in Geneva. Here today the Arab League agreed to work for inclusion of the Palestine issue as a separate item on the General Assembly agenda, which also could ease the way for the Palestinians to end their boycott of the Geneva talks. It was also announced here that Mr Ismail Fahmy, the Egyptian Foreign Minister, is to visit Russia in mid-October for the high level talks that the Soviet Union cancelled earlier this summer. TEL AVIV: Israel security forces have arrested a number of Druse villagers from the occupied Golan Heights, in a crackdown on a suspected Syrian spy ring. Police sources said that one of those seized was Sultan Kanj abu Selah, brother of Golan Druse leader of Shaikh Suleiman Kanj abu Salah. AMMAN: King Hussein of Jordan flew to London today for talks with British Government leaders. VIENNA: President al-Assad of Syria arrived in Bucharest today for talks with President Ceausescu of Romania whose country is the only Soviet block state which has diplomatic relations with Israel.—UPI, Rauter and AP.

Fresh flooding hits three Indian states

From Our Own Correspondent Delhi, Sept 2. New floods hit Bihar, West Bengal and Assam today, paralyzing communication and causing widespread damage. The population in the affected areas is about 15 million. Some 3,500,000 people in West Bengal are reported to be suffering near-famine conditions as a result of a combination of flood, drought and high prices. They are said not to have eaten rice for months and to be subsisting on a gruel of milo (sorghum resembling millet), grass seeds and roots. Our Foreign Staff writes: Britain is increasing aid to Bangladesh, whose economic problems have been worsened by disastrous floods. Mrs Judith Hart, Minister for Overseas Development, said in a statement yesterday: "I am offering a further £4m to add to the £5m commodity aid we promised to Bangladesh in June." An agreement for the whole £9m will be signed in Dacca in the next day or two. I hope this new aid, with our earlier commitment, will allow actual expenditure to reach as much as £12m this financial year. On top of this, Britain is spending £2,500,000, sending out food. In Bonn, the West German Government announced that Mr Kemal Hossain, the Bangladesh Foreign Minister, would arrive on Thursday for four days of talks.

Joint talks cancelled after discovery of mass grave

Continued from page 1 together for the first time last Monday by Dr Waldheim, the United Nations Secretary General, during his visit to the island, and the source said that Monday's meeting was postponed tentatively until Friday. They agreed to discuss "humanitarian issues" dealing with the problem of the tens of thousands of refugees, on both sides, the exchange of prisoners of war, supply of cut-off communities with food and other necessities and the tracing of missing people. Nicosia, Sept 2.—A Greek Cypriot gunman of Eoka B was shot dead by the police, when he refused to surrender his automatic rifle, an official announcement said today. This is the first reported case of an Eoka B gunman being shot by the police since Mr Clerides took over the Cyprus Government on August 22. A police statement said the incident developed during a wedding reception on Sunday night in the village of Korakou, in the Troodos mountains west of Nicosia. The gunman, Mr Ioannis Pangelos, started terrorizing the wedding guests by firing his rifle over their heads. "He was warned by the police to stop firing and surrender his weapon, but instead he fired at the police, forcing them to fire back, wounding him fatally". It was not immediately clear whether the incident marked the beginning of a police crackdown on the dozens of Eoka B gunmen who still roam the countryside, terrorizing supporters of Archbishop Makarios. Last Friday Eoka B was blamed by Dr Vassos Lyssarides, the island's socialist leader, as responsible for the abortive assassination attempt against him that day.—AP.

Zagreb train disaster to be reenacted

Zagreb, Sept 2.—Yugoslav authorities plan to reenact the Zagreb train disaster, probably on Wednesday, to clear up the mystery surrounding the crash in which at least 124 people died and more than 50 injured. Officials said today they hoped to establish the fatal sequence of events which led to the crash by running an identical train into Zagreb main station in conditions as near as possible to those last Friday. Eight carriages identical to those on the crashed train will be detached from a scheduled Munich-Belgrade express for the experiment.—Reuter.

Mr Fulbright leads US delegation to China

Peking, Sept 2.—A delegation of seven members of the United States Congress arrived in Peking today for a two-week visit to China. They are likely to discuss the possibility of an invitation to President Ford to visit China. The delegation is headed by Senator William Fulbright, of Arkansas, the Democratic chairman of the Senate foreign relations committee, and includes Senator Hubert H. Humphrey, of Minnesota, the former Democratic Vice-President. The delegation is the sixth congressional group to visit China since President Nixon's visit in February, 1972. It was greeted by Mr Chou Chiu-ye, vice-president of the Chinese People's Institute for Foreign Affairs. The delegation is expected to be received by Mr Chou En-lai, the Prime Minister, if his state of health allows. Diplomatic circles in Peking believe that China has succeeded in Washington discreetly about the possibility of a visit by President Ford. But both Chinese and American sources said that no formal invitation had been made. Diplomatic sources believe that a second visit to China by an American President could be realized only if serious progress was made on the Taiwan question. An American source confirmed that Mr Chou had sent a warm message to Mr Ford when he became President. It is believed that Cambodia, will be among the subjects discussed. Agence France-Press.

Radiation leak halts Japan's nuclear ship test

Tokyo, Sept 2.—Japan's first nuclear-powered ship, the Mutsu, has suspended her reactor test in the North Pacific after a radiation leakage, according to reports reaching Tokyo today from journalists on board. They said that radiation comparable to the amount to be released with the reactor working at full capacity was observed yesterday when the output was still almost nil. The radiation was not strong enough to affect the crew. The \$350-ton ship, completed two years ago, left her home port of Muroran in northern Japan a week ago for her first sea trials. She had been tied up for 22 months because of opposition from local fishermen, who said she could contaminate the sea with radioactivity.—Reuter.

Advertisement for HENRY WORTHINGTON EUROPEAN TECHNICAL AWARD. The award is for previously unpublished papers on improvements in fluid machines and systems for energy conversion. It is sponsored by the Executive Commission of the EEC EUROPEAN ECONOMIC COMMUNITY. Worthington Pump International Inc., manufacturers of equipment for fluid handling and conversion of energy, announces a technical contest throughout Europe (1st prize up to \$3000, 2nd prize up to \$2000, 3rd prize up to \$1000). The prizes will be awarded on the basis of an international contest open to all European residents or others attached to European organizations. Papers are expected to contribute to improvements in the design, performance, operation and maintenance of fluid machines of any type. Emphasis should be given to improvements directed to energy conversion and conservation. Please request the contest regulations and the application form to: Secretariat, Worthington European Technical Award, Via Pirelli 19 - 20124 Milan (Italy).

OVERSEAS

Frelimo and Portugal to begin formal talks in Lusaka this week on independence

Dar es Salaam, Sept 2—The Mozambique Liberation Front (Frelimo) and the Portuguese Government will begin formal negotiations this week to transfer power to an independent Mozambique. The negotiations in Lusaka, beginning on Thursday, will set a date for independence and work out the "quickest mechanism" for handing over power to a Frelimo Government.

The President of Frelimo, Mr Samora Machel, told a press conference at his Dar es Salaam headquarters today that he was confident the peace talks to end the 10-year-old guerrilla war and 300 years of Portuguese rule would be successful.

Portuguese officials reported last week that agreement in principle on important issues was reached last month in Dar es Salaam. It was now a question of "dotting the i's and crossing the t's".

Sikkim chief minister denounces ruler

From Michael Hornsby Delhi, Sept 2 The controversial Constitution (36th Amendment) Bill, which provides for Sikkim's "association" with the Indian Union, was today introduced in the Lower House of the Indian Parliament, by Mr Swaran Singh, the Minister for External Affairs.

What's a nice dress like you doing in a place like this?

The dictionary defines a museum as a "building used for storing and exhibition of objects illustrating antiquities, natural history, arts, etc.", with the chilling rider that the term "museum piece" may be used in a derogatory sense about old-fashioned things.



by Prudence Glynn

Brigadier in Salisbury to start new job

From Our Correspondent Salisbury, Sept 2 Brigadier John Probert, a former British Army officer who served with the aviation forces on the Rhine, has arrived in Salisbury to take up his post as chief executive officer of the city.

Lack of crèches holds up work on Siberian dam

Moscow, Sept 2—Work on a huge hydro-electric power dam in Siberia is being held up by a shortage of baby crèches, as well as concrete mixers and skilled hands.

Construction of the Sayanskaya-Shushenskaya dam on the Yenisei river some 300 miles south of Krasnoyarsk, is lagging as workers join, then melt away.

Jail and 10 strokes for drugs case Malaysian

Singapore, Sept 2—A Malaysian was sentenced today to 10 years in jail and 10 strokes of the rotan (cane) for possessing Heroin and morphine worth more than £650,000 in the retail market in the United States.—Agence France-Presse.

Wave of killings and bombings is threatening to wreck the Government of Señora Isabel Perón

From Stuart Sterling Buenos Aires, Sept 2 "I know that many think that as I am a woman, I am unfit to take the helm. But I have two arms and in one hand I have Juan Domingo Perón and in the other, Eva Perón."

Last Tuesday saw the opening of Browns shoe and accessory shop at 23 South Molton Street, London, W1. Exceptional shoes for men are bench made in England, as well as by Cerruti and Rossetti, and women have elegant ankle-strap shoes and straight-legged boots by Maud Frizon.

Kashmir parties turn down Pakistan plan

From Our Correspondent Rawalpindi, Sept 2 A formula for the Pakistan part of Kashmir (Azad Kashmir) adopted at the behest of the Pakistan authorities by the Azad Kashmir Assembly has been repudiated by the Kashmir Liberation League.

Argentina's left tires of right's supremacy

From Stuart Sterling Buenos Aires, Sept 2 "I know that many think that as I am a woman, I am unfit to take the helm. But I have two arms and in one hand I have Juan Domingo Perón and in the other, Eva Perón."

Interior Minister, recently stated that "it is still not time to impose a state of siege". However, extremists are indicating that he will not be left up in their campaign to topple Señora Perón's Government.

Mr Whitlam and trade unions agree to differ

From Our Correspondent Melbourne, Sept 2 An effort to improve relations between the Whitlam Government and the trade union movement was made today at a conference at which both sides expressed their views freely and frankly.

Khushchev bust by 'donkey tail' sculptor

Moscow, Sept 2—The only monument in the Soviet Union to Nikita Khrushchev, the former Prime Minister, was placed in a Moscow cemetery today.

able old master push people towards backing their own tastes?

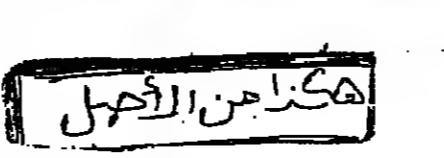
able old master push people towards backing their own tastes? Will they go to student shows and buy pictures they actually like, rather than something with a name to swank about or something as an investment hedge against inflation?

Advertisement for 'The Craftsman's Art' exhibition, featuring a photograph of a man and text about the exhibition's focus on craftsmanship and design.

Mr Ernest Neizvestny, aged 49, the sculptor, and Mr Khushchev's son, Sergei, aged 39, supervised the work. Mr Khushchev once said of the sculptor's abstracts: "A donkey with his tail could do better work."

Mr Whitlam said that he would welcome closer consultation, pointing out that, for example, many ministers first learnt about serious industrial disputes not from the unions but from the press. Mr Hawke emphasized that there was no suggestion from the trade unions that ministers should be censured or a call made for their resignations.

Mr Whitlam said that he would welcome closer consultation, pointing out that, for example, many ministers first learnt about serious industrial disputes not from the unions but from the press. Mr Hawke emphasized that there was no suggestion from the trade unions that ministers should be censured or a call made for their resignations.



SPORT

Tennis Only Cox is left but some British losers push abilities to limit

From Rex Bellamy, Tennis Correspondent, Moscow, Sept 2. During the first five days of the United States tennis championships...



Rosewall: Once again he turned back the clock.

John Newcombe beat Tony Roche in a match that revived some favourite memories and delighted players and spectators alike.

Racing

Anne's Pretender out to further his claims

By Michael Phillips, Racing Correspondent.

Visitors to Sandown Park on Friday will have an opportunity to assess Anne's Pretender...



Tony Murray brings Briar Patch home to win the Loudwater Nursery Handicap.

In fact he assured me in his characteristically forthright manner that Over The Years is far more than a passing fancy...

majority of yesterday's newspapers, the colt in the race. But in the long run he stood down in favour of Lester Piggott.

Rain disrupts junior championships

Heavy rain ruined the start of the British junior lawn tennis championships at Wimbledon...

ing 2-5 in the first set, won the next five games at a cost of six points and went to 5-3 in the second set.

Top Secret plan carried out to the letter

A bold plan by Peter Robinson, the Newmarket trainer, carried out to the letter by his 15-year-old apprentice, Tom Whelan...

different story with the 33 to 1 chance Eric Stuart, for it was only by a neck that Peter Perkins landed the horse from the trainer...

Wilmore shows liking for soft going at Pontefract

Wilmore, yearling blinker, for the first time, won the Grimethurpe Handicap at Pontefract yesterday.

she will be OK for Mr James Wilson's stud. After a few spells last year, with only eight winners, Gray has had 10 successes this season.

German makes his mark after a copybook start

By John Nichols. The second points race of the European Soling championships was held in the Baltic yesterday.

third, all started at the port end of the line which the 52 starters were allowed away after one general recall.

Brighton programme

Table listing Brighton programme races including 2.00 COLDEAN STAKES, 2.30 CORN EXCHANGE STAKES, 3.0 JIM TAYLOR HANDICAP, etc.

Newton Abbot programme

Table listing Newton Abbot programme races including 2.15 BAYTOR HURDLE, 2.45 SOUTH BERN STEEPLECHASE, 3.15 YARNER HURDLE, etc.

Newton Abbot NH selections

Table listing Newton Abbot NH selections including 3.45 HOLNE STEEPLECHASE, 4.45 BRIMLEY HANDICAP BURLE, etc.

Modern pentathlon

Russians ahead but denied another team title. Moscow, Sept 2.—The Soviet Union drew further ahead yesterday on the second day of the world modern pentathlon championships.

Yearling sales

Prendergast outbids father on quiet opening day. Business was slow on the opening day of Goffs September yearling sale at the National Horse Show yesterday.

Brighton selections

Table listing Brighton selections for various races including 2.00 COLDEAN STAKES, 2.30 CORN EXCHANGE STAKES, etc.

Warwick results yesterday

Table listing Warwick results yesterday including 2.15 PANORAMA HANDICAP, 2.45 SOUTH BERN STEEPLECHASE, etc.

Pontefract

Table listing Pontefract results including 2.15 JUNIOR PLATE, 2.45 SOUTH BERN STEEPLECHASE, etc.

U.S. opponents for Stracey and Finnegan

John H. Stracey and Kevin Flanagan, both winners of European titles in Paris in May, are matched with American opponents at the Albert Hall, London, on October 1.

Baseball

AMERICAN LEAGUE. New York Yankees 5, Chicago White Sox 3. Milwaukee Brewers 3, California Angels 2.

Motor racing

ONTARIO. Ontario Grand Prix. 1. A. Redman (GB), 2. N. P. (GB), 3. D. (GB).

Wrestling

INSTANTANEOUS world three-day tournament. 100 lbs: 1. M. (USSR), 2. S. (USSR), 3. S. (USSR).

Wrestling

AMERICAN LEAGUE. New York Yankees 5, Chicago White Sox 3. Milwaukee Brewers 3, California Angels 2.

£4,000 plus Appointments

CJA RECRUITMENT CONSULTANTS
35 New Broad Street, London EC2M 1NH
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Prospects to advance to position of Chief Underwriter in the short/medium term—opportunity to secure capital

CJA SENIOR UNDERWRITER/ADMINISTRATIVE EXECUTIVE

HONG KONG £7,000-£10,500 (Income Tax 15%)
ONE OF THE LARGEST GENERAL INSURANCE UNDERWRITERS IN THE FAR EAST

This vacancy is caused by expansion. We invite applications from candidates aged 28-35, who have gained at least three years experience at an Assistant Branch Manager level or higher, with involvement in organisation methods and systems design, in an active branch in a large insurance company, and will have also controlled four or more underwriters. Responsibility will be to deputy Chief Executive for supervising international underwriting activities and specific direction of Hongkong based underwriting team of skilled underwriters covering all classes non-life insurance and employing some hundred administrative and clerical personnel. While principal concern will be sound underwriting control, proportion of involvement will be in the introduction and development of streamlined operating procedures linked to a computer operation. Duties can be expected to involve some travel within the Pacific Area. A knowledge of FOC/AOA tariffs as well as fire orientation will be an advantage. Initial remuneration £7,000-£10,500 (Income Tax 15%), plus contributory pension, accommodation, free life insurance, educational allowance, and home leave passages. Applications in strict confidence under reference SUAE 3548/TT, to the Managing Director.

A varied, non-routine appointment—opportunity to advance to position of Employee Relations Manager

CJA EMPLOYEE RELATIONS ADVISER

CENTRAL LONDON £6,000-£8,000
MAJOR INTEGRATED INTERNATIONAL OIL COMPANY

This is a new vacancy caused by expansion in the U.K. and on the European Continent and is open to candidates aged 28-34 who will have acquired sound practical experience both in the corporate personnel function and also in the field in an organization utilizing modern personnel policies and practices, preferably in the oil or other process industries. Reporting will be to the Head of Corporate Personnel. Responsibilities will encompass conducting thorough project investigations in virtually every area of the personnel field, including personnel policies, organization planning, salary administration, fringe benefits, pension planning, appraisal systems and manpower planning and development as it relates to activities in the U.K. and European Continent. Up to 20% away travel will be necessary. Close liaison will be maintained at all times with top management. Candidates must have the ability to analyse thoroughly and the capacity for clear, logical expression both in written and oral communication. Initial salary negotiable £6,000-£8,000 plus contributory pension, free life insurance and assistance with removal expenses if necessary. Applications in strict confidence, under reference ERA3541/TT, to the Managing Director.

CAMPBELL-JOHNSTON ASSOCIATES (MANAGEMENT RECRUITMENT CONSULTANTS) LIMITED
35 NEW BROAD STREET, LONDON EC2M 1NH TEL: 01-588 3588 or 01-588 3576. TELEX: 887374

STRATHCLYDE REGIONAL COUNCIL

DIRECTOR OF SOCIAL WORK

This advertisement appears with the approval of the Scottish Local Government Staff Commission.

Applications are invited for the post of Director of Social Work. The successful applicant will be responsible for providing the council, its committees and the Chief Executive with professional advice on matters relating to the Social Work function and for ensuring that the council's Social Work policies are effectively co-ordinated and implemented throughout the region. He will also be expected to contribute fully to the corporate activities of the management team of chief officials.

The Strathclyde Region has a population of more than 2 1/2m people. It is centred round a densely populated industrial conurbation of over 300 sq. miles while on the other hand its peripheral areas are rural in character and are often sparsely populated. The Director of Social Work will, therefore, face the challenging task of developing an organization capable of dealing with a very wide range of Social Work problems.

The post is open to persons with the necessary qualifications and experience within the United Kingdom whether within or outwith the local government service. The salary scale will be fixed in accordance with the schemes of salaries agreed by the Joint Negotiating Committee for Chief Officials of Local Authorities (Scotland) and the National Joint Council for Local Authority's A.P.T. and C. Services (Scottish Council) as appropriate. It will however be of the order of £11,000/£12,000 per annum.

Applications, stating age, present post and present salary and giving details of relevant qualifications and experience, should be sent to the Chief Executive, Strathclyde Regional Council, City Chamberlain's Office, City Chambers, Glasgow G2 1DU. The closing date for applications is Friday, 20th September, 1974.

City Chambers, Glasgow. **LAWRENCE BOYLE** Chief Executive.

INTERNATIONAL WHALING COMMISSION

Established under the International Whaling Convention 1946, which provides for the proper conservation of the world's whale stocks, and thus the orderly development of the whaling industry—invites applications for the post of

Secretary

He will be responsible for the conduct of the Commission's business under the general authority of the Chairman, and the taking of appropriate action for the immediate or long-term operation of the annual budget, the drafting of the annual report and arranging all necessary correspondence with all member governments and associated organizations and will arrange appropriate information and publicity services. He will be required to represent the Commission at national and international meetings. Considerable travelling will be involved from a base in London or elsewhere in the south of England.

His increased amount of his work will be scientific. He will help co-ordinate the research programmes of member nations and other organizations, and encourage studies and investigations in the light of the discussions of the Commission's Scientific Committee. He will assemble and edit reports for publication, and will be responsible for the preparation of the Commission's scientific and statistical data and will edit reports for publication.

Candidates should have a good degree in a biological science and experience and proven ability in administration. Knowledge and preferably practice in the acquisition, storage and retrieval of biological data would be an advantage, as would experience in fisheries and wild life research.

English is the official and working language of the Commission but a knowledge of other languages will be an advantage. The appointment will be reviewed after 2 years and the salary, which will be negotiable, will be within the range of £7,500-£9,000 per annum.

Applications containing full details of qualifications and experience and the names and addresses of 2 referees should be sent to

MR. R. STACEY,
INTERNATIONAL WHALING COMMISSION,
ROOM 276,
GREAT WESTMINSTER HOUSE,
HORSEFERRY ROAD, LONDON SW1P 2AE,
TO ARRIVE NOT LATER THAN 31 OCTOBER, 1974.

ESSEX COUNTY COUNCIL
CHIEF EXECUTIVE AND CLERKS DEPARTMENT

Deputy County Prosecuting Solicitor
£5,484-£6,024 Post No. CE 368

Applications are invited from solicitors with extensive experience of advocacy and criminal law and particularly police prosecutions work. Some management experience is desirable.

The post is second to that of the County Prosecuting Solicitor leading a large team of Senior and Assistant Prosecuting Solicitors dealing with all types of crime on behalf of the Essex Police Authority involving frequent appearances in Magistrates Courts throughout Essex. A current driving licence is essential. Essential car user allowance payable and an assisted car purchase scheme is in operation. Lodging and disturbance allowances and assistance with removal expenses in approved cases.

Application forms and further particulars obtainable from County Personnel Officer, Essex County Council, County Hall, Chelmsford CM1 1LK, to be returned by 20 September 1974.

WORK MEASUREMENT SPECIALIST

Highly successful U.S. management consulting firm has requirements for mature professional to carry out and manage assignment in United Kingdom. 2-5 years experience in work measurement, method improvement, and time study. Excellent salary and expense allowance. Excellent benefits. Should forward resume, salary requirements, availability and telephone number in confidence to:

MCS/Eur, c/o Isenhour,
21 Rue de la Falsanderie,
75016 Paris, France.

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We would like to meet you if you are a lending officer with at least five years' experience.

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Your salary will be determined by negotiation and will be commensurate with your ability and experience.

Please write giving details of age, experience and qualifications to the Personnel Officer, Bank of America, Europe, Middle East & Africa Division Headquarters, 7 Old Park Lane, London, W.1.

All replies will be treated in the strictest confidence.

BANK OF AMERICA

THE OPEN UNIVERSITY
REGIONAL DIRECTOR FOR SCOTLAND

Applications are invited for the post of Regional Director for Scotland in the Scottish Office, designated as Scottish Director. The Scottish Director is the senior officer responsible for the Open University's activities in Scotland.

The person appointed will be concerned with the implementation in Scotland of all relevant aspects of the University's recruitment and supervision of students, including the recruitment and supervision of full-time staff tutors and senior demonstrators. Co-operation with universities and other institutions of higher, adult and further education, and with local education authorities, is a vital part of the job.

According to the successful applicant's qualifications and experience, the salary to be offered will be at an appropriate point on the University's senior salary scale, ranging from £4,707 to £6,707 per annum, plus a pension scale effective 1.10.74.

Applications should be made by letter, accompanied by a curriculum vitae, to the Personnel Officer, The Open University, P.O. Box 15, Milton Keynes MK8 9BA. From whom further particulars are available. Closing date for applications: Friday, 27th September, 1974.

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The administrative offices will be in the South Herts/North London area and duties will cover a wide range of functions and activities, such as goods and services purchasing, acquisition and maintenance of premises and supply of printing and stationery.

Accordingly it is essential that the applicant has had at least five years' experience of commercial purchasing, a similar period in the management of premises and all aspects of printing and stationery, and exposure to staff management at a senior level.

It is likely that the man we seek will be at least 35 and preferably have some additional knowledge of, or experience in, personnel management, communications systems, typing services and file record maintenance.

We offer a salary in the region of £4,500, a range of benefits plus a challenging opportunity to create and develop your own career.

Write to Mr G. Slipper, AGRC Holdings Limited, 31 Old Burlington Street, London W1X 1LB.

NATIONAL UNION OF TEACHERS
DEPUTY GENERAL SECRETARY

Applications are invited for the post of Deputy General Secretary of the National Union of Teachers. The person appointed will be concerned primarily with deputing for the General Secretary of the Union over the whole range of his functions and duties as the Union's chief official. The Deputy General Secretary will have special responsibility in the educational field and will be expected to undertake such other duties as will be assigned to him/her from time to time. Applicants should have recent teaching experience in maintained schools and a thorough knowledge of the education system of the United Kingdom.

The salary attaching to the post is £5,428-5 x £252-£6,689 per annum plus London Allowance of £164. The successful candidate will be assisted with the expenses of removal and of obtaining housing accommodation within a reasonable distance from Hamilton House.

The person appointed will be required to commence duties on 1st January 1975 or earlier if possible.

Conditions of Appointment and of Service can be obtained from Hamilton House.

Applicants, giving experience and qualifications, together with names of two referees (who should not be serving members of the Union's Executive), should reach the General Secretary, National Union of Teachers, Hamilton House, Station Place, London WC1H 8EG, not later than 18th September, 1974.

SALOP COUNTY COUNCIL
COUNTY SUPPLIES OFFICER
£5,500-£6,000 (Under review)

Applications are invited for this newly created post with the County Council.

Particulars and application forms may be obtained from the undersigned (Telephone No. Shrewsbury 52211 Extension 471).

Closing date for applications 30th September, 1974.

W. N. P. Jones,
Chief Executive,
The Shirehall,
Abbey Foregate,
Shrewsbury.

8th August, 1974.

Salop County Council

Industrial Relations—Finance

Midland Bank wish to appoint an experienced personnel man to join its Head Office Personnel Relations team which is responsible for negotiating with the recognised unions over the full range of personnel activities, including job evaluation. The job requires the ability to analyse current practice and to assist in the formulation and development of forward looking policies. Candidates should be aged not less than 35 with about 10 years' relevant experience with predominantly white collar organisations and qualified members of the Institute of Personnel Management.

The essential personal qualities are enthusiasm, a capacity for sustained hard work and willingness to work as a member of a team.

Starting salary not less than £6,000 with the usual conditions of service in the Bank, including non-contributory pension scheme.

Please apply in strict confidence quoting reference number 1597 to Clive and Stokes, 14 Bolton Street, London W1Y 8JL.

Clive & Stokes
Appointments & Personnel Consultants

THE ROYAL COLLEGE OF PATHOLOGISTS

Applications are invited for the post of

SECRETARY TO THE COLLEGE

for Executive and Administrative Duties. Male or Female, aged 30 to 50; £3,306 to £4,895, according to qualifications and experience.

For more information write to the Registrar at 2 Carlton House Terrace, London SW1Y 5AF.

LEGAL NOTICES

In the High Court of Justice (Chancery) Division, Company Court, at London, in and under the seal of the said High Court, the following notice is hereby given that the above-named company by its directors, Messrs. George Limited, have resolved to wind up the said company and that a meeting of the creditors of the said company will be held at the offices of Messrs. Herbert Pether Latham & Co., Liquidators of the said company, at 10 Colindale Avenue, London, N.W.9, on the 12th day of August 1974, at 10 o'clock in the forenoon, for the purpose of ascertaining the names of the creditors of the said company and the amounts of their claims, and for the purpose of appointing a liquidator of the said company. Any creditor of the said company who has a claim against the said company, whether or not such claim is in the course of being proved, must attend the meeting in person or by his solicitor for the purpose of ascertaining the names of the creditors of the said company and the amounts of their claims, and for the purpose of appointing a liquidator of the said company. If any creditor of the said company fails to attend the meeting, his claim against the said company will not be taken into account in the winding up of the said company. The meeting will be held at 10 Colindale Avenue, London, N.W.9, at 10 o'clock in the forenoon on the 12th day of August 1974.

G. H. P. LABAN, F.C.A.,
Liquidator.

Personnel Manager
CHASE MANHATTAN BANK N.A. LONDON

This multinational bank needs a Personnel Manager for its London branches.

The successful applicant will be a self-starter in his late twenties or early thirties with developed skills in most areas of personnel administration and proven ability in running his own department. Once appointed he will be offered every opportunity to expand his knowledge and experience, with particular emphasis on job evaluation, salary administration, appraisal schemes, fringe benefit areas including pensions and insurance, training in man management and staff communications generally.

Previous experience in both banking and working with an American company would be an advantage.

Salary negotiable around £6,000. Benefits include assisted mortgage, non contributory pension.

Please reply with curriculum vitae to

MR. O. STEELE
Woolgate House,
Coleman Street, London, E.C.2.

Solicitor for Commercial Litigation

Coward Chance have an opening for a solicitor in their Litigation Department. The work will involve a broad field of commercial litigation cases, frequently with international implications.

Applicants should have good degrees and other qualifications to demonstrate their ability. Recently qualified applicants will be considered. A good salary will be paid according to the ability and experience of the person selected.

Please apply, giving full details of your education and career to:

G. L. Wareham,
Coward Chance,
Roxey House, Aldermanbury Square,
London EC2V 7LD

IRAN VANDAD AND ASSOCIATES LTD.
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ENGINEERS and INSPECTORS

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Please send résumé (tal. No. if poss.)
Write for appointment
c/o 415 Great West Road, Hounslow, TW5 0BY

PUBLIC NOTICES

H.M. LAND REGISTRY
NOTICE TO CREDITORS
In the High Court of Justice (Chancery) Division, at London, in and under the seal of the said High Court, the following notice is hereby given that the above-named company by its directors, Messrs. George Limited, have resolved to wind up the said company and that a meeting of the creditors of the said company will be held at the offices of Messrs. Herbert Pether Latham & Co., Liquidators of the said company, at 10 Colindale Avenue, London, N.W.9, on the 12th day of August 1974, at 10 o'clock in the forenoon, for the purpose of ascertaining the names of the creditors of the said company and the amounts of their claims, and for the purpose of appointing a liquidator of the said company. Any creditor of the said company who has a claim against the said company, whether or not such claim is in the course of being proved, must attend the meeting in person or by his solicitor for the purpose of ascertaining the names of the creditors of the said company and the amounts of their claims, and for the purpose of appointing a liquidator of the said company. If any creditor of the said company fails to attend the meeting, his claim against the said company will not be taken into account in the winding up of the said company. The meeting will be held at 10 Colindale Avenue, London, N.W.9, at 10 o'clock in the forenoon on the 12th day of August 1974.

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G. H. P. LABAN, F.C.A.,
Liquidator.

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CANON INC. Advice has been received from...

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REYNOLDS PORTER CHAMBERS. NOTICE is hereby given that...

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No. 001987 of 1974. In the HIGH COURT OF JUSTICE...

No. 001988 of 1974. In the HIGH COURT OF JUSTICE...

No. 001989 of 1974. In the HIGH COURT OF JUSTICE...

THE COMPANIES ACT 1948. In the MATTER OF THE COMPANIES ACT...

THE COMPANIES ACT 1948. In the MATTER OF THE COMPANIES ACT...

This week at Sotheby's. Tomorrow, Wednesday, 4th September... Tuesday, 10th September, at 11 a.m....

Bonham's. Founded 1793. Sales at the Montpelier Galleries... Fine Art Auctioneers and Valuers...

Debenham Coe. Fine Art Auctioneers and Valuers. Established 1813. PORCELAIN, OBJECTS D'ART AND CARPETS...

COUNTRY PROPERTIES. SURREY HILLS EUREHURST. A FAR CRY FROM CRISIS. LONDON AND SUBURBAN...

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LONDON FLATS. WIMBLEDON PARKSIDE SW19. HYDE PARK GARDENS W.2. TITE STREET, S.W.3...

Harrods Estate Offices. AUCTION ROOMS. The 4th, 5th and 6th of September...

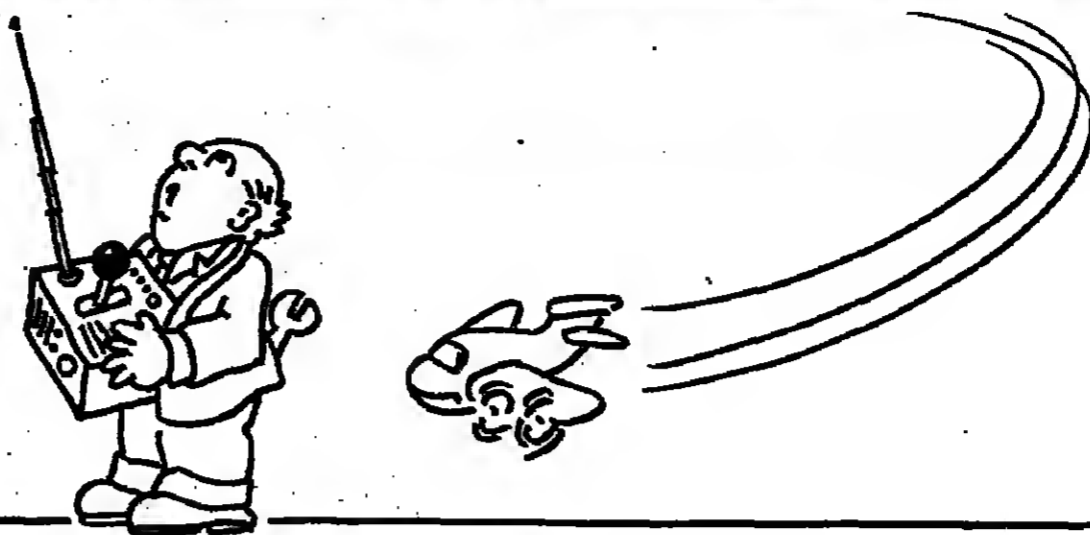
PHILLIPS. Today, Tue., Sept. 3, 11 a.m. Good English, Continental Furniture...

PHILLIPS IN KIDWELLY. Sept. 4 Books, Books, Pot Lids & Sept. 5...

PROPERTY ABROAD. DOMESTIC SITUATIONS. BUTLER. JUDGES' LODGINGS. MEDOMSLEY Co. Durham...

THE MINISTRY OF ELECTRICITY AND WATER FOR THE UNITED ARAB EMIRATES INVITES TENDERS FOR THE FOLLOWING WORKS...

a Special Report



Aerospace electronics

Freedom from government control means lively competition

Huge potential for world sales

by Arthur Reed
Air Correspondent

The United Kingdom aerospace electronics (avionics) industry goes to this year's Farnborough Show in a buoyant mood in spite of the inevitable deleterious effects upon it—as upon the rest of British aerospace—of the world energy crisis.

Avionics are probably better able to resist such pressures because their products are forming an increasingly large percentage of aerospace needs as the years pass by. At the moment they constitute about one-third of the cost of any new aircraft, but this proportion will inevitably increase as the reliance of the aviation industry upon avionics becomes greater, and the products themselves become more and more complex.

This increasing content in aircraft, whether civil or military, and in their attendant ground facilities, from air traffic control to instrument landing systems, means that the avionics industry has been able to occupy a more important place in the counsels with government which lead up to new projects and a better say in the way in which those projects are managed.

Until recently the industry found itself with little say. It was frequently presented with a fait accompli by the civil servants who drew up guidelines for new projects with little or no recourse to the thinking and capabilities of the individual companies which make up the avionics sector of British aerospace.

Today relations with the various government depart-

ments involved in this field have vastly improved. Numerous joint government-industry committees and working parties have been established so that the industry now finds itself in at the birth of the majority of new ventures, and able to shape them for the good both of itself and of the nation.

There remain, however, some sections of the industry which believe that this collaboration could go further still. A criticism throughout industry is that a far larger proportion of the government-appropriated research and development funds for avionics should be channelled to the industry's own laboratories rather than to those of government establishments, such as RAE, Farnborough.

Although it does rely on public funds for a great deal of its research and development, avionics in the United Kingdom still finances much of its own work in this sector as private ventures. It is a form of funding now almost unknown in the expensive airframe and engine sectors of British aerospace, and this ability to be completely commercial and free to a major degree from government control makes inevitably for a very lively and competitive industry.

Firms within the Electronic Engineering Association do, in fact, compete among themselves on similar projects, but at the same time they often collaborate on other projects and subcontract work to each other.

This bullish atmosphere has been affected to a significant degree by world forces over the past 12 months, in particular galloping inflation and the effect on airlines and military aircraft operators of the energy crisis brought about by the October war between the Arabs and the Israelis.

A further aggravation was the series of industrial disputes which affected the whole country early this year and which made its impact on avionics at a time when their order books were highly satisfactory. A shortage of components and materials at that time had a disappointing effect on output and turnover.

Perhaps the most damaging result of these events in early 1974 was on the reputation of the British industry in its overseas markets. Although it is apparently recovering, it will not be possible to judge the full effect until the end of the year—although the gathering at the Farnborough Show of senior executives from companies from abroad who are traditional customers should provide an excellent sounding board.

The avionics industry is bracing itself to meet the challenge at Farnborough of the full competitive effort of the United States industry, which is being allowed in for the first time under a change of the rules by the Society of British Aerospace Companies.

There are indications that the American industry is taking Farnborough very seriously, with more than 120 different products listed for display, many of them in the electronics field.

Executives of the British industry react, however, by pointing out that the United States participation will allow them to see at close quarters and all under one roof just what the main opposition is doing. They point out that, even though the British industry does not have the complete capability of their transatlantic competitors, particularly in the space and rocketry sector, they have sold a wide range of their products into America and are a force to be reckoned with there.

Meanwhile, the British industry believes itself to be well established to sell its many successful wares developed in the past, while being embarked on numerous very promising projects for the future—among them improvements to instrument landing systems to make them less subject to interference from buildings and local traffic, microwave mobile instrument landing systems for both civil and military uses, data links to join up highly developed airborne electronic systems with highly developed electronic systems on the ground and aeronautical satellites.

This latter project has become a temporary victim of the energy crisis. The airlines, through their trade body, the International Air Transport Association (IATA), were never in favour of the system, which was to provide navigational and communications systems for the whole industry via at least two satellites placed in orbit, one over the Pacific and one over the Atlantic.

The airlines contended that the slowing down of their traffic, brought about by higher prices for aviation fuel and the resultant need for higher fares, the carriage of more people in fewer larger airliners and the rapid development of on-board navigation systems, have conspired to make aero-satellites unnecessary at present.

Communications, they add, can still be carried successfully on the traditional high frequency radio bands.

Despite these objections, the European Space Research Organization (Esro) has the funds, and is going ahead with its plan. Further busy markets for their products are foreseen by the industry in the oil exploration industry, with a growing need for communications and navigation equipment for helicopters, in equipping the new generations of wide-bodied airliners and super-jets and their attendant ground facilities, and in updating existing and Third World airports to the demanding standards of the United Nations aviation body, the International Civil Aviation Organization (ICAO).

Whether partnership with the EEC countries will help or hinder British avionics business is not yet clear. According to the latest report of the Electronics Engineering Association, the first year—1973—in the Community had little direct effect on business although there were longer-term signs that the policies of the Community in such things

as public purchasing might have a more significant effect.

Industry leaders are pessimistic about the future possibility of a European avionics industry. A political forcing together has been tried and has been seen to fail—as it has in the airframe and engine sectors of aerospace, but the executives do not rule out closer integration if it comes on purely commercial lines.

Memories of British companies emerging second best in competition for avionics contracts for the European multirole combat aircraft (the MRCA) to West German firms—backed by the United States—and Italian companies, die hard, while there also remains a strong feeling that much British avionics skill has been handed over to the continentals in past joint projects.

Despite these old wounds, British avionics may be expected to collaborate more fully with the Europeans in future as the French and the West Germans begin to match the across-the-board capability of the industry in this country.

But deals will be done on a commercial, rather than on a government-inspired basis, the major object being to keep the volatile American industry at bay on the Continent where they already have a firm foothold through their continuing sales of transport and military aircraft, and there were longer-term signs that the policies of the Community in such things

advanced hardware can be doubly beneficial to the nation: first in providing the complex defence capability which is necessary to fulfil our obligations to our partners and to give the country a military credibility; and second, in providing the stimulus to export by generating further investment in research and development and helping to sustain an industry on the scale necessary to compete in the world. This dual value is particularly appropriate in electronics. It is sometimes argued that a cut-back in government defence spending will stimulate exports by releasing capacity; the opposite has been the experience in the past decade or two.

Taking an even more fundamental view of the economic situation, it is apparent that our survival as a trading nation depends on the most effective use of our own inventiveness, skill and ingenuity. It would seem that the sector of British industry in which these qualities can be most usefully deployed is in electronics in general and aerospace in particular.

Electronics is an industry of outstanding benefit to the economy because it can react quickly to technological change, the consumption of imported raw materials and fuel is fairly low, and the capital investment necessary to sustain a thriving business is within normal corporate means. Above all, the situation in the market place could not be better. The world market which has been reasonably

electronic for some years is beginning to open up in a big way, and if we attack it hard, the potential is enormous.

Fortunately, although the stimulus inevitably has come from oil revenues, actual and potential markets are by no means limited to the main oil producers.

In aerospace electronics, investment in research and development, plant and facilities, brains and skill and in efficient marketing has achieved remarkable results in the past in the export markets. The opportunity to become even more successful positively exists now. Many civil and military markets for aerospace electronics have been opened up in the past decade or two, and a fair proportion of these are capable of substantial expansion.

It is important that continuity in world markets be preserved, by divorce from political involvement, by government encouragement of exports through use of defence expenditure, where it will stimulate development of exportable equipment, and by the Government abstaining from overseas purchase of equipment unless there has been absolutely no possibility of avoiding such a course without serious damage to our capability.

The repercussions of overseas purchases of aerospace electronics and the resultant setbacks to British industry are perhaps not fully appreciated. The loss of business itself represents a loss of investment in research and

by J. W. Sutherland
Managing director
Marconi Radar Systems

It is recognized increasingly that electronics in many forms is a major high-technology element of what is loosely defined as aerospace and that not only are techniques, applications and the scale of activity advancing now, but they have enormous scope for future evolution.

The part played by electronics in the field of aerospace is of cardinal importance in the aircraft, spacecraft and in the ground environment. In defence applications, for example, there have been exciting advances in sensors, missile systems and data systems for the gathering, dissemination and use of information almost entirely in the area of electronics.

Even more spectacular developments are planned. In the civil field, air traffic control, air navigation, aircraft control and data systems, air communication and satellite communication are obvious examples of aerospace activities dominated by electronics.

It can be argued that Britain is involved in an economic conflict which is as severe and damaging in its implications and outcome as any military confrontation, and that any strategic considerations of national defence in the broadest sense must take into full account the economic aspects of an overall policy.

Thus defence expenditure directed to high technology research and development and to the procurement of

satisfactory for aerospace

continued on next page

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Bomb guidance replaces aiming

By R. C. Ashworth

If one paramount lesson was learned from the bombs, shells and bullets fired in the Second World War, it was that throwing things at your enemy in a random fashion is costly and rarely does the job well. This led to a tremendous investment in research into ways to get the hang to him rather than roughly to his low area.

This concept, coupled with the tremendous technical advances made under the pressures of war, gave birth to a new industry—guided missiles. Their most important ancestor was radar, which had already demonstrated its ability to detect and locate an enemy. What more natural than to extend this capability to guiding a missile on to him.

Thus some of the simplest early guided missiles rode directly along the beam from a ground radar locked on to the target. Others used heat-seeking devices in the final phases.

Britain was in the front rank of this new technology; the experience and knowledge gained by the research establishments was applied to the first generation missiles—Sea Slug, Thunderbird and Bloodhound.

These were, however, simple weapons by comparison with their modern counterparts. These owe their existence to the huge strides made in the technology of the electronics industry.

During the past 25 years electronics have progressed through several generations of components, from valves to transistors and from transistors to integrated circuits. All these have led to reductions in size and increases in reliability to the point where it is now possible to put a complete radar system not on the ground but in the nose of the missile itself.

The significance is that it is now not only feasible, but common practice for the missile to home on to its target and to determine when the target is near enough to be destroyed, then activating its own warhead.

These improved capabilities have given rise to startling improvements in effectiveness (or probability of kill) in all fields.

The ground based SAM recently proved itself a match for modern aircraft and the anti-tank weapon did likewise. One of the most dramatic advances is in the air-to-air missile which gives improved detection range, acquisition range and kill in the interception role.

In the air-to-surface field, greater emphasis has been placed on the stand-off weapon—that is, a weapon which can be fired from an aircraft outside AA range and find its own way to the target. This general concept of guidance has even found its way into the old fashioned free-falling war bomb, as illustrated by the use of smart bombs by the United States Air Force in Vietnam.

The cleverness of guidance systems has itself given rise to a sort of three-dimensional chess game. This is ECM (electronic counter measures) and ECCM (electronic counter counter measures). This is a fascinating race in itself and involves a sequence of detection, jamming and deception in which one side develops a technique and the other a counter technique. The art is to predict what the enemy will do to counter your move, then counter his move before he thinks of it.

These moves imply the design and development of sensors and processors small enough to be built into the guidance system. In the latest series of British weapons this has reached the point where a digital computer is carried in the missile itself to process the information received from the sensors, determine from this what moves the enemy is making and activate the correct counter-counter measures, all in the time of flight from release to target.

By comparison with the guidance side of the business, the more traditional fields of propulsion and aerodynamics have made little progress. Speeds have improved somewhat, as have ranges of missiles, but undoubtedly the greatest impact has been in the electronics areas. It is, therefore, not surprising that the cost of the guidance system represents half of the cost of the missile. However, this is more than justified

Omega joins the radio aids

By Mark Lambert

International editor, Flight International

We have probably seen the end of the navigator in the air, at least in the sense of the Sir Francis Chichester who combined sextant, tables, charts, compass and compass platform, electronic bearing and distance measurement from ground beacons or radar observations have long since replaced them.

What has been greatly improved and elaborated in recent years is the processing of this raw information and the provision of controls and indicators with which the pilot can watch the system, demand specific information and read the answer.

The advances in navigation, then, are not the invention of basically new aids to navigation, but of improving the tools for the job.

In the military field, inertial navigation is still the standard high-grade method, although the reliability, cost, size and weight of inertial systems have improved tremendously in the past five years. For shorter range purposes, or where cost and space are limiting, Doppler radar and gyro direction indicators are proving to be more and more effective alternatives to the inertial system, at a tenth the cost.

Inertial navigation has established itself as a civil transoceanic aid and nearly all long-range airliners carry three sets, which carry out virtually all en route navigation.

Where then, in this technology-ridden world, can anything new emerge? Inertial navigation will not radically change. Neither will the beacons on which the airways are established. Neither will ground-based radar. But in just one new variety of radio aid, called Omega, we see the future. The digital computer in all its forms will revolutionize the processing of navigation information.

Electronic displays will revolutionize the way in which navigation information is presented to the pilot. What this means is that the electronic techniques which have emerged from computing and automation will aid extreme miniaturization

distinguishes modern navigation. Gone are the sextant and tables, clock-parallel rule and protractor. There is neither time nor willingness to use them. The electronic and mechanical systems of inertial navigation, Doppler and compass platform, electronic bearing and distance measurement from ground beacons or radar observations have long since replaced them.

The new radio aid, Omega, which started life as the measurement of very low frequency (VLF) radio transmissions, is now on the verge of becoming a sound commercial proposition. If several complicated corrections can be applied, a VLF receiver can measure distance from the transmitter. By measuring the distance from two transmitters, a position can be triangulated.

The range of these stations is so long that eight stations cover the Earth. But corrections need to be applied, which would fill a number of tables, were it not for the miniature computer which can store and apply all the variables without burdening the human operator.

Being entirely electronic, Omega does not require the expensive mechanical servicing needed for inertial systems. Also, Omega is continually referenced to the Earth's surface, while inertial position is memorized from a known starting point and may wander thereafter. Omega is a name in watch.

The small, special-purpose digital computer has already earned its place in aircraft as a universal arithmetic box and has been adapted to perform the essential and fundamental processing for almost any function, whether it be navigation or engine control or autopilot. In navigation, the computer is uniquely able to take the existing range of basic navigation signals, civil or military, and process them into the answer to the question "Where do I steer on for how long?" questions which are the pilot's principal navigational problems.

So nothing has changed fundamentally, but nothing is quite the same. The black boxes are no longer much more than glorified calculators. The job is being done better, despite the departure of the navigator. All of which really means that the new technology is worth its keep.

International debate over most acceptable apparatus

By Pearce Wright

Science Correspondent

A few months ago a pilot of a Cessna private aircraft was rescued by air traffic controllers in frightening circumstances. Within minutes of takeoff the altimeter and speed indicators failed; followed shortly by the failure of the rate of climb instruments.

It was night time, but conditions were fair. He was brought safely down because the air traffic control centre had a computer-based tracking system which continuously produced ground-speed calculations and estimates of the rate of descent. At one stage, approaching the outer marker of the airfield, the pilot's ground speed had fallen to 90 knots and he was ordered to increase immediately to 130 knots for a safe approach.

The pilot was clearly fortunate to have flown from a well-equipped airport. While the major centres of air transport are usually bristling with electronic aids, there are many small airfields often used on a seasonal basis, mainly for tourism, with the minimum amount of equipment to sustain an operating licence. Yet there is almost universal agreement that most major accidents occur at the moment of landing.

The most up-to-date equipment essential for major international airports costs millions of pounds. Without such apparatus London, Paris, New York or any of the other big air terminals could cope with less than a quarter of their present landings and take-offs. Most of these centres are expanding capacity either by building a new airport or extending facilities at the established one.

Air traffic control is a classic example of instant information processing and communication. Nevertheless, the development of satisfactory systems remains a subject over which the air transport industry and its equipment suppliers continue to argue. There is no dispute over the level of safety being sought, the dispute centres on the possible technical and economic alternatives on offer.

Various groups are debating the pros and cons of the type of radio communication system considered most accurate, easy to handle and cheap. The development of air crew, which is also financially practical for a commercial airport. The nature of the airline business makes this an international issue and it is one in which yet there is almost universal agreement that most major accidents occur at the moment of landing.

One of the most widely known successes was the work of the Blind Landing Experimental Unit at Bedford which developed a weather landing equipment suitable for general aviation use. Rigorous conditions have to be imposed on the communications systems introduced for airport work whether they are for speech links, automatic transmission of data between aircraft and the ground, or any other communication service. The main goal is to get freedom from interference, because the choice of equipment can cause greater hazards than none at all.

There is general agreement that improvements in landing systems would be welcome. It seems equally clear that the chance of achieving a universal answer is remote. Most of the discussion surrounds the next generation of apparatus to succeed the long-established Instrument Landing System (ILS).

The ILS apparatus stands to be too cumbersome and expensive for smaller airfields, but it is an ideal aid for many pilots because it allows no further bargaining approaching conventionally on instruments, coming down on additional instrument information derived from the ILS, or landing automatically with an all-weather system using ILS.

Undoubtedly by the range of technical ideas for a new system, the United States Federal Aviation Administration favours development of a project known as a Universal Microwave Landing System, or UMLS. What is more the administration would like a common military-civil programme because of the potential advantages of concentrating development and operation in one system.

While no fundamental split exists over this principle, the defence needs would involve a technical variation of the equipment used for commercial aircraft. Different frequencies would be chosen with major implications for the design of equipment and instruments. Military needs would require a system which could be operated from portable ground stations as well as fixed ones at major air bases.

Obviously with a list of different priorities, the commercial aviation interests wait a fairly long-range transmission unit which is not influenced by sudden changes in weather. Unfortunately for the Federal Aviation Administration, the conclusions from a meeting

of specialists from Australia, Britain, France and West Germany showed at least four other designs of microwave landing systems which will compete for adoption in 1975 by the International Civil Aviation Organization.

There is apparently little possibility of reconciling the approaches chosen by the various groups. Methods vary widely as to how many radio beams should be used to locate and transmit information; how the transmissions should be coded to overcome interference; what frequency band should be selected to get the best results.

Whoever has to choose a system faces an intrinsically difficult job. Apart from criticism from vested commercial interests which have backed one particular version, any decision must be open to technical criticism because it leaves out the attractive features of one of the others.

Ironically, the microwave landing system has the potential of being installed in many of the smaller landing strips for which ILS is too big. This does depend on the design and does not apply to all of the schemes. So perhaps the right choice will be the one that offers scope for improvement to the greatest number of airports.

Where marketing is concerned, effective export sales need a strong organization at home to back overseas effort in the territory, a strong selling team to bring in business, and on the ground a permanent presence over a long period to gather background intelligence in depth and provide immediate information necessary to initiate progress and clinch an order.

Britain, with its long tradition of world trade is probably as well experienced and equipped as any country in this respect; most major companies have overseas subsidiaries, independent agents, representatives and consultants of their own in this background that the future expansion can and period. Second, reliability must take place.

Shuttle is exciting project for Europe

The last Skylab mission of the National Aeronautics and Space Administration (Nasa) was seen as the end of an era not just for the manned space flights but for the development of avionics systems and the related technologies.

Although most of the advances in avionics came from the enormous amount of research and development behind the shuttle programme, the civil side also contributed substantially.

Contrary to what seems a widely held belief, the contribution from the manned space effort has not suddenly ceased now that only one mission remains for the near future. The remaining flight next year is the joint Soviet-U.S. project in July. Two Russians in a Soviet Soyuz craft and three Americans in an Apollo command module will dock to form the first international space workshop in orbit.

With their recent Soyuz 14 spacecraft the Russians seem to have tested satisfactorily the improved docking and safety systems requested by American advisers during technical exchange visits between the two countries.

Officials from both sides of the venture, the names of the Apollo-Soyuz test project, are confident that launching will go as planned at 15.30 Moscow time (12.30 GMT) followed seven and a half hours later by an Apollo launch from Cape Kennedy. Apollo is a larger craft than the Russian one. As it carries more fuel and supplies, the manned space flights but for the development of avionics systems and the related technologies.

As far as Nasa is concerned, the transfer between the two craft would mean a two-hour wait in the docking module for each astronaut making the trip across.

Proposals for payloads for the Spacelab are open to all branches of science and technology. There are two overriding conditions: results of experiments must be freely disseminated, and equally, the main purpose of an experiment must not involve direct commercial exploitation.

Selection of experiments presents no particular difficulty for the ESRO which carries packages from several universities and research institutes.

The selection and training of crews to the satisfaction of Nasa standards might be another matter. Above all, the United States agency has emphasized the restrictions imposed to ensure that the safety and success of each flight is not jeopardized by inadequately trained crews.

Over the years, through the Mercury, Gemini and Apollo missions, the Nasa experts have learnt the most efficient ways of installing equipment and instruments, of allowing for information to be measured and recorded, and of merging the designs from teams working on different aspects of the space vehicle.

Without question, the coordination and management evolved by Nasa are effective. But they have been won through years of experience that included earning from many painful mistakes. The success of the Spacelab hinges on the Americans applying their skill for coordination to get between their own part of the project and the European part.

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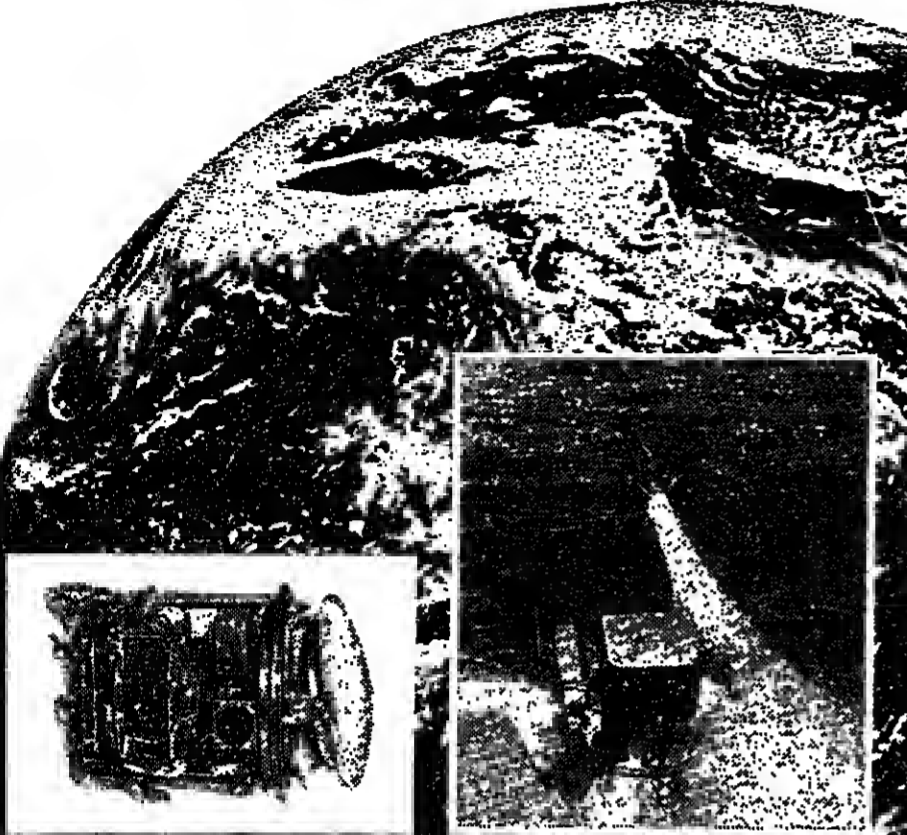
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P.W.

P.W.



Active radar homing head for anti-ship missile

Guidance system for Sea Dart ship-to-air missile



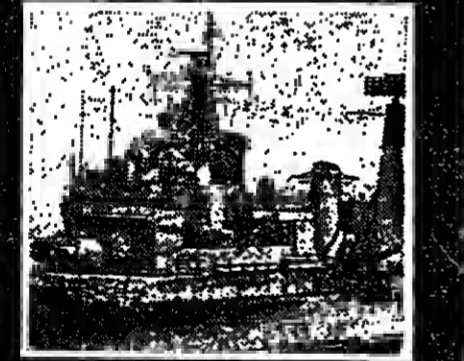
Microelectronic anti-aircraft homing head for Sparrow



Blindfire radar for Rabier



A Tigerfish torpedo being lowered into a Royal Navy submarine

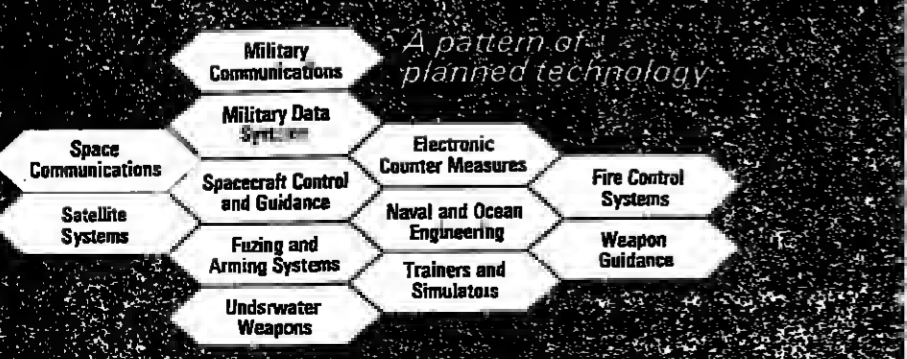


SCQT installation on HMS Blake



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مكتبة الأصيل

Refined instrument displays reduce cockpit workloads and enable pilots to fly blind in fog

by I. F. E. Coombs

Workload is now a familiar word to both specialist and layman and is used in most areas of industry and transport. Part of this load is the reading and the interpretation of instruments. It is measured in different ways depending on the situation, whether we are studying the work of the motorist, the operator of a factory machine or the pilot of an aircraft.

use of instruments as a primary aid. Just as many of us look at a watch to find out how much time has elapsed or remains rather than to see the actual time, so the driver is often more concerned with how near he is to the speed limit.



One of the latest DME indicators with LED display elements.

As aviation developed with each new generation of aircraft flying faster and higher, climbing and descending faster, more and more instruments were added. At first these were provided just to enable the pilot to know how fast, how high and which way he was going.

Basically, there have been two ways of showing information to the pilot. First by the familiar pointer moving across the clock-face instrument. Second, by giving the pilot a pictorial or position display—the attitude director from which the pilot can see instantly whether he is level with the horizon or banked to left or right and whether the aircraft is flying level or climbing or diving.

only lightweight pointers over limited scale lengths. In the past 15 years instrument mechanisms have been refined and elaborated by incorporating electronics and miniature electric servo motors so that there are now many different ways of presenting clear, easily read and unambiguous information to a pilot.

Modern avionics can show clearly the following data: a map of the area over which an aircraft is flying with salient navigational points marked along with identifying groups, a model of the aircraft to show its position and heading, the

best tracks to or from navigational waypoints and alternative routes, as well as air traffic control information.

Even though the dial type instruments have been raised to a highly advanced level, there are practical limits. If a clear representation of clear information is needed or if a number of different values from different systems have to be displayed on one instrument, then recourse has to be made to the electronic display, such as the CRT.

play can be close packed into an instrument case 3in square and about 7in in length. If only a numeric reading is needed, then gas discharge tube elements, now familiar as displays for pocket computers, can be used to give a bright, easily read presentation using smaller instrument cases.

Modern avionics can show clearly the following data: a map of the area over which an aircraft is flying with salient navigational points marked along with identifying groups, a model of the aircraft to show its position and heading, the

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Looking into the future of a challenging career

by Parry Rogers
director of personnel
Plessey Company

As Farnborough comes around again, boys of all ages renew their enthusiasm for the aircraft on display and for all the technical wizardry of the aerospace industry. As the younger boys demonstrate their aeronautical knowledge and are able to explain to their fathers the difference between MDB and VOR, some parents may be anxious because of the impracticalities of the spaceman and test pilot ambitions, and because they lack information about suitable careers to which their sons and daughters can be encouraged to aspire in industries which can be expected to prosper for many years.

In future, electronics will provide the videophone, car navigation and ignition control, among other things, on your car, the press-button telephone and the electronic telephone exchange. Faster and safer road traffic control systems, and the control of air and water pollution to improve the quality of our environment.

have lost their jobs through no fault of their own in their forties only to find that no one will consider them for a comparable job because they lack the qualifications they should have obtained in their youth.

potential. Not all schoolmasters are reliable judges of a person's capacity for vocationally oriented education and some young people develop an enthusiasm for education of a kind they see as more meaningful than the subjects inflicted upon them in some schools.

A parallel professional career ladder alongside the managerial ladder is needed to show that the management route is not the only way to success and that the engineer with talent does not have to take responsibility for other people to achieve recognition. For many the managerial ranks are the right and proper target.

How wise are those organizations which have changed the structure—or at least the nomenclature—with the word foreman abolished and the first level of supervision given management status so that it is an acceptable position to the fledgling engineer, as well as a position of achievement to the man who has earned promotion from the shop floor?

One such industry is electronics, and this article offers to parents and students some information about careers in electronics and where to turn for more detailed information.

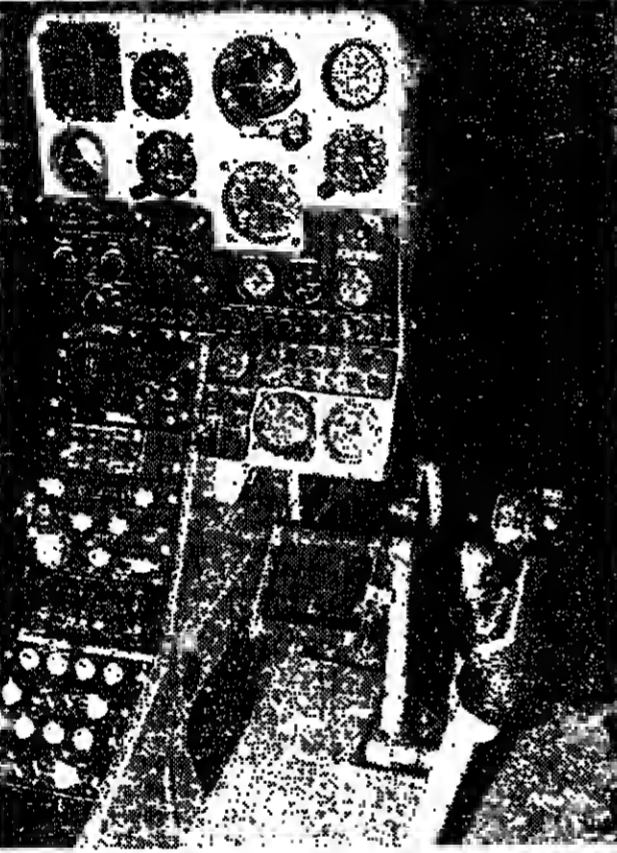
To try to look further into the future, at some stage your home—or your son's—will have an electronic wall containing your daily newspaper electronically distributed, a computer terminal which will enable you to shop from your home, seeing the goods in the store on your television screen and charging your bank account directly to pay for the goods you select. The video phone will link you with friends and the television cassette player will enable you to record programmes when you are out.

There are a variety of channels of entry into the electronics industry and individual advice is necessary to explore the right one for each boy or girl. Let us consider just two of them—

the technical apprentice coming in at the age of 16 or 17 with some O levels, including maths and physics, and the graduate in electronic engineering.

Whether your son is best suited to one of these paths or another is something for his form master, his careers master and his headmaster should advise you on. His form master and his headmaster should be competent judges of his academic

There are some spectacular success stories in the electronics industry where top management positions have been reached by men in their thirties and the trend continues to be in favour of youth, particularly as the rate of technical change in this industry continues to accelerate.



The controls of the Westland Gazelle helicopter include, in the left-hand corner, the units for the Plessey PTR377 UHF/VHF communications transmitter 'T' receiver and the Plessey PTR446 IFF/SSR transponder.

Novel radar scanner provides many data simultaneously

by P. E. G. Bates
divisional managing director, Plessey Radar

The radar division of Plessey is actively involved in a number of exciting new developments aimed at improving the facilities available to both civil and military users.

The most important operational benefit of the AR3D is that because of its high data rate it can provide three-dimensional surveillance simultaneously on a large number of targets. In an air defence role one AR3D could, at vastly reduced cost, replace the conventional system consisting of a planar radar with four air height-finding radars.

The Series Nine display is aimed primarily at the radar market, but will also serve any application where bright, high quality graphic data is required from a computer system.

For air defence, however, the most advanced radar in the world is not, in itself, sufficient. The emphasis has to be on a company's proved capability to devise, engineer, install and maintain a complete system.

The new generation of radars now being supplied by Plessey Navaid incorporates the Doppler principle of transmission. Put simply, the Doppler effect is the change in frequency of a received signal when either the transmitter or the receiver is moving, one in relation to the other. The most homely example is the change in the sound of a train whistle as the locomotive advances towards and then recedes from a stationary listener.

MLS neutralizes the risk because it is less prone to extraneous reflections from the ground or airport. It also enables approaches to be made from angles other than a straight extension of the runway centre-line and even curved approach paths. This increases handling capacity for landing guidance and also enables alternative approach paths to be adopted where, for example, aircraft noise is an environmental problem.

In this receiver system the return signals are amplified and separated into channels representing elevation bands approximately 2°. The signals are time-compressed and their frequencies analysed to give fine elevation measurement from which the target height is automatically calculated and is displayed alongside the appropriate target.

Looking specifically at civil aviation, Plessey Radar has introduced a number of new developments. A new primary radar equipment for air traffic control terminals and approach surveillance is the dual beam AR15/2 S-hand (10cm) medium-range radar, replacing the earlier AR1 and AR15 equipment.

Parallel with these developments, Plessey has introduced a new graphical display system called Series Nine. The display achieves a new standard of quality in presentation of distorted characters and vectors; the latter, though achieving the accuracy of digital techniques, lacks the snags often associated with this type of display.

As part of the United Kingdom Government and other export projects, most of which are classified, Plessey Radar has one of the largest programming teams in the world, with the skills and disciplines necessary for real-time, computer-based air defence systems. This consists of system analysis, project definition, programming, and hardware engineering.

As part of the United Kingdom Civil Aviation Authority's major air traffic system programme of re-equipment, Plessey DVOR beacons are scheduled for installation at sites throughout the United Kingdom. This forward-looking programme will ensure that Britain will be one of the first countries to have 100 per cent DVOR beacon coverage in its airways systems.

Plessey has established itself in a very short time as a pioneer and leader in these two fields of advanced navigation and landing aid techniques for the betterment of en route and terminal guidance for the world's civil airways.

LTV A-7 Concorde MRCA Boeing 747 Trident
Douglas DC10 Lockheed L1011 VC10
Fokker F28 BAC One-Eleven HS748 Jaguar
Phantom Boeing YC-14 Mirage HS748 Jaguar
Boeing 737 Fokker F27 Nimrod Lynx Heron
Galaxy Puma Boeing 707 Douglas DC9 SAAB
AS125 Boeing Wessex Viggen Macchi G222 Apache
Gulfstream Wessex Viggen Macchi G222 Apache
Canberra AB205 Macchi G222 Apache
Grumman F-14 Fiat G91Y Aztec
Twin Comanche Strikemaster
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GEC-Marconi Electronics

Fighting the battles by computer saves men, money and machines

by J. D. Conry

Simulation is the technology of make-believe and, as in all games of pretence, has the key advantages that the players need not really get hurt and the game is cheaper than the real thing. Since it is now fashionable to measure injury and death in financial terms these can be considered as complementary.

It is hardly surprising, therefore, that as aircraft have become more advanced and consequently more costly, the emphasis on flying in simulators has increased. Naturally the simulators have become more complicated, not just matching the aircraft system but increasing their realism and therefore their effectiveness as replacements for the aircraft.

Thus we have seen the progressive development from the original Link Trainer, used during the Second World War, which was to all intents and purposes a procedure trainer, right through to its logical successor the Apollo Spacecraft Simulation System.

The key advances in realism were made in the 1960s as demonstrated by the total change in training schedules during the decade; when, for example, the conversion training for a pilot transferring from one aircraft to another changed from being totally in the aircraft at the beginning of the decade to being only about 10 per cent in the aircraft at the end.

The fundamentals of economics are the driving force for this. Thus for a Boeing 747 or Douglas DC10 the direct saving from simulator training exceeds £10,000 a pilot, without taking into consideration the increased availability of aircraft not tied to training needs and the ability to train beyond the limits allowable on the aircraft.

Add to this the ability to carry out recurrent checks of pilots under readily observable and automatically recorded conditions, thus catering for the requirements of their period ratings, and the flight simulator becomes a necessity to any flight training organization.

The advances in simulator capabilities which have enabled this transfer of training from aircraft to simulator to occur are demonstrated by the difference between the £125,000 Boeing Stratocruiser simulator used by BOAC in 1951, which had neither motion nor visual flight capabilities, providing only flight procedure training, and the £1m simulator of today with six degree motion platforms and advanced visual systems.

The benefits in the military field are even more dramatic, since simulation here extends to cover the whole of the complex sensor weapons and countermeasures systems in a full mission simulator. This is highlighted by the latest and most advanced full mission simulator to be introduced into service by the RAF for Strike Command's Anti-Sub-

marine Warfare jet aircraft, the Nimrod. With this trainer, the RAF for the first time has a total crew trainer with each crew member being able to operate a full range of operation equipments in the coordinated, controlled and fully flexible tactical exercise setting required for both conversion and squadron training.

The Nimrod Mission Simulator has two parts: first a Nimrod Flight Simulator on a three degree of freedom motion platform with a Visual Flight Attachment capable of showing both land and seascape. This simulator provides the standard conversion, safety and continuation training for the pilots and engineers.

The second part is the Maritime Crew Trainer (MCT) which is, in effect, that portion of the Nimrod fuselage occupied by the navigation, sensor and communication team. The flight simulator and maritime crew trainer can be joined electronically to allow a full crew exercise or, if the flight simulator is required for purely pilot and engineering training, each part can be used separately. In these circumstances the MCT receives its "flight deck" input by way of a secondary non-standard pilot position.

The MCT fuselage houses the full range of ASW navigation, sensor, weapons control and communications equipment used by the crews to locate, track and attack targets. All systems

have realistic inputs/outputs which are coordinated to accord with the overall tactical setting required for any particular exercise.

Full allowances are made for aircraft manoeuvrability inside a geographical exercise area of 2,600 nautical miles square and also for target type, sea state, bathythermal, wind, under-water and other conditions normally experienced by the operators when flying the Nimrod on operational sorties. Equipments include sonics, electronic counter measures (ECM), radar magnetic anomaly detector (MAD), exhaust gas detector, weapon selection and release, and full navigation instrumentation. A motion platform is provided for turbulence effects.

An external console allows the exercise controller and specialist instructors to monitor student actions taken in the fuselage; to inject faults, environmental or target changes; and to record the progress of the exercise for full replay and analysis.

The MCT provides detailed and realistic training to meet the stringent requirements of both ASW conversion and squadron training without the need to assemble the submarines, surface vessels and aircraft which would be necessary in a live exercise setting. All these can be programmed into the computer system which coordinates and records each exercise in accordance with the weather

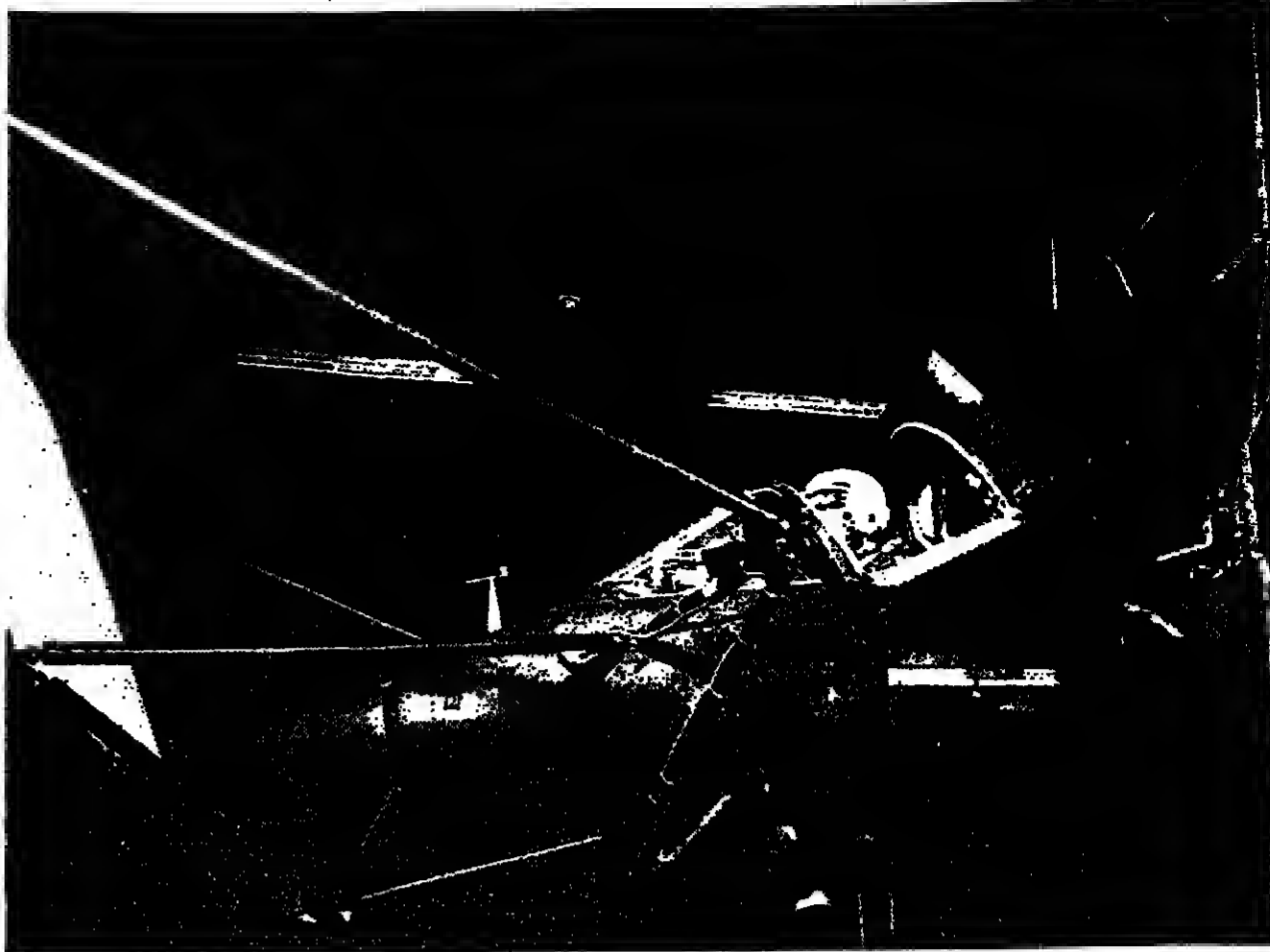
and other conditions required by the tactical setting.

The training value achieved by squadrons and training units using the Nimrod Full Mission Simulator has reached most of the goals set and will add enormously to the operational efficiency of the RAF ASW crews. In addition, the financial savings from reduced aircraft flight times alone mean the present simulator has paid for itself after about 18 months.

What of the future? There can be little doubt that Full Mission Simulators will develop further in line with later technologies. This will bring improvements in realism by the application of digital storage techniques to visual systems and radar land mass simulation.

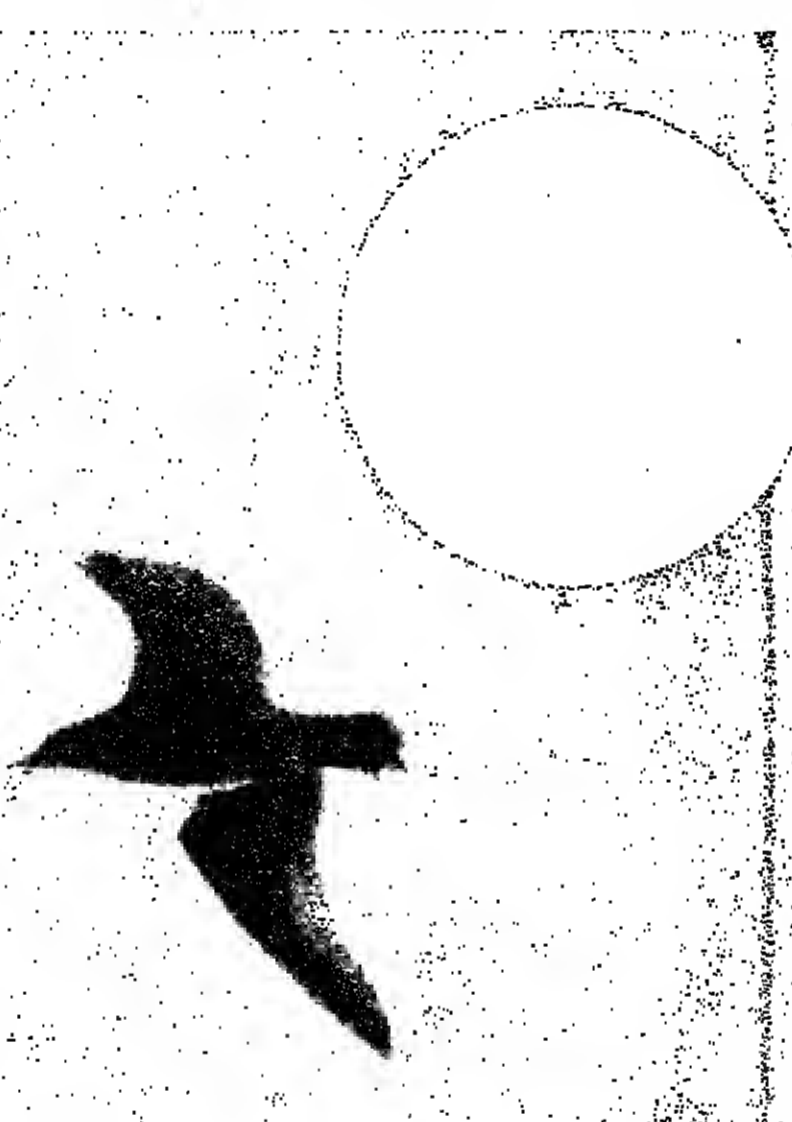
As with all modern computer-based systems, the trend to increase flexibility through modularity is already apparent, so we can expect to see the mini-simulator with growth potential and also the adaptable simulator. This same technological trend to compact modular systems leads to the possibility of increased mobility through trailerization.

Already it is possible to carry out training for full tactical missions more effectively using simulators rather than aircraft, at a fraction of the cost and risk. Future developments in simulator design can enhance their value to the user.



This Harrier cockpit is reproduced faithfully so that the transfer of training from simulator to aircraft is smooth and fast. The visual scene is projected on the nose-mounted screen by the three-barrel colour projectors to the rear.

AVIATION



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The MEL Equipment Company UK
Philips Electronic Industries Canada
Philips Telecommunicatie Industrie Netherlands
Philips Teleindustri AB Sweden
Philips Gloeilampenfabrieken Netherlands (electro, acoustics and lighting divisions)
Télécommunications Radioélectriques et Téléphoniques (TRT) France

Their resources are interrelated and readily available so that they can be focused on a specific project or directed towards a broad-based objective.

Jump jets, dancing helicopters and fast fly-pasts have all come about through superb technology.

PHILIPS IN AVIATION as in many other fields, make a significant contribution to the future of man in the air.



PHILIPS

September 2-8, at Farnborough International '74

Britain keeps its head up

by Mark Lambert

Neither civil nor military aircrews can perform their missions without constantly scanning instruments. Height, speed, course, and even climb or descent are not immediately apparent by looking out through windscreen and windows. Yet they must be known accurately at certain times, and there are many other factors to be taken into account as well.

The most intriguing development in aircraft instrumentation is that an instrument is no longer necessarily a mechanical clock-like device indicating one or two measurements against fixed scales painted on the dial face. An instrument now is as likely to be an electronic display like a television screen or cathode-ray tube.

The first of these weaves a textured picture by scanning in fine horizontal lines down the screen. The second writes symbols individually on a blank background. Both will become common in cockpits.

To indicate speed, height, attitude and where-to-go, information electronically on a screen may sound complicated and expensive, but it has commanding advantages. Electronics, for a start, are more reliable and potentially cheaper than mechanical and electro-mechanical devices. They are more easily and reliably manufactured. Even the Swiss watch is becoming electronic.

A picture drawn electronically can be composed for the purpose at the minute, erased and replaced by an entirely different picture simply by switching the electronic circuitry. The same space can be used for a variety of entirely different patterns of information. The pilot gets the right information for each phase of flight, without scanning among rows of dials. And he gets it in his central field of view without booting for it.

This concept has been in circulation since the early 1960s and its most spectacular manifestation has been in the head-up display, invented in Britain as a further development of the traditional mechanical gyro sun on, so to speak, the gunsight and still a product of skilled knowledge almost exclusive to Britain. Nearly all head-up displays in America, Sweden and Germany are British made.

What the head-up display does is to form the symbiotic information, in a series of lines, scales, sym-

bolts and figures, on the face of a miniature cathode-ray tube. This image shines through lenses on to a semi-reflecting glass plate mounted in the pilot's line of sight through the windscreen. The symbols are clearly visible as a disembodied, bright moving pattern superimposed on the outside world.

It is possible to give the pilot all the instrument information he needs in this form so that he need not look down at his instrument panel. He can fly with his eyes constantly on the outside world, but see all the necessary instruments at the same time.

This device, revolutionary in its time, has recently been developed much further. It was found a few years ago that a miniature digital computer could better "write" and move the instrument symbols in the head-up display. Once the computer was there, it could be extended to calculate, then display aiming instructions as well as the basic instrumentation. So the head-up display (HUD) became the HUD weapon-aiming system.

The extended miniature computer could either give the pilot a bomb-aiming sight in the form of a single bright line to manoeuvre easily on to the target, or it could draw a tracer line depicting accurately the path of the fired bullet to the pursued aircraft. With electronic and computing refinements, both these techniques have produced devastatingly accurate aiming systems and have been proved in many combats.

Next came the combination of scanned television picture with the individually drawn symbols of the cathode-ray technique. An infra-red "eye" carried in the nose of the aircraft produces in total darkness a television-like picture of the terrain ahead and this can, by electronic video combining, be superimposed in the head-up display.

Now the pilot sees in his normal ahead vision at night an electronic picture of the scene before him, at the same scale and focus, with his head-up instrument symbols superimposed on it. If someone were to turn the traditional mechanical gyro sun on, so to speak, the electronic image would exactly overlap the outside world.

Pilots have made direct-hitting attacks in pitch darkness using this night vision system fitted in United States Navy A-7 Corsair fighters. The American Navy has called it Target

Recognition Attack Multi-sensor—Tram for short.

By now, optical, electronic and computer were deeply blended. It was only a matter of time before the fairly complex and heavy lens systems of the head-up display were set aside in some cases and the same functions performed with a larger, directly viewed electronic screen for the benefit of the navigator, who does not need to observe the sky ahead.

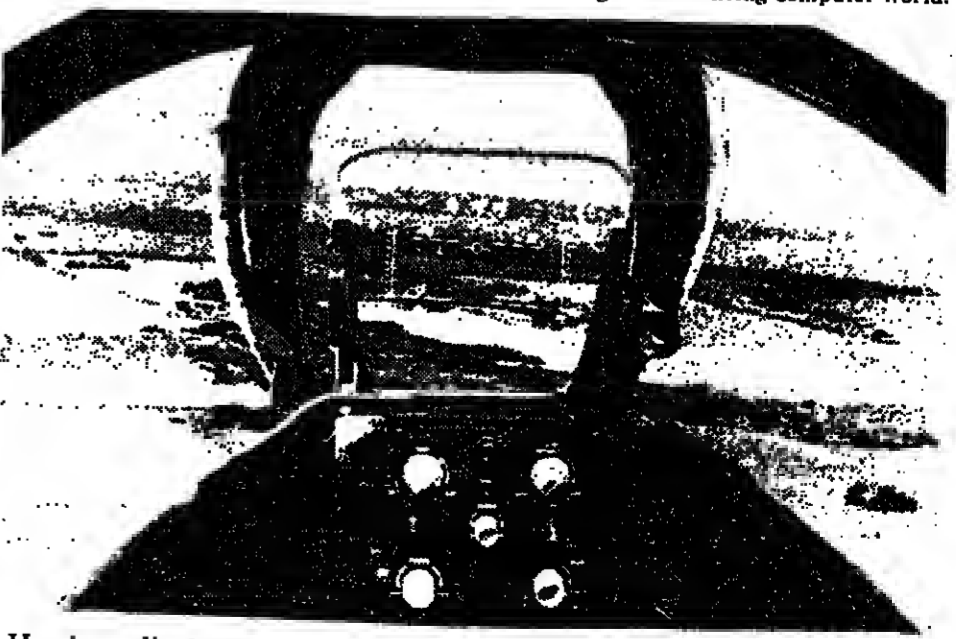
Light and dark shaded areas, lines, symbols and figures, all in a television type of picture, can form a symbolic equivalent of a complete flight instrument panel. Or the cathode-ray tube writing technique can "write" a panel of figures and words on the same screen. This could provide information of an administrative kind about the fuel, hydraulic, electrical and other systems in the aeroplane.

Next followed the use of the cathode-ray tube screen in the cockpit as the method of communication with the central computer, which more and more military aircraft are carrying. The computer displays information on the tube-face. With a keyboard beside the tube, the operator sorts the information, adds or deletes data from the computer's memory, builds up a picture of the operation and decides what to do next.

This is where the technology stands. Head-up display and its head-down equivalent are an accepted part of any new military aircraft. Europe's Multi-role Combat Aircraft (MRCA) gives the pilot a head-up display for all his normal flying and for aiming his weapons. His navigator has not one but three electronic screens and editing information generated by radar and navigation systems.

Both head-up and head-down displays communicate directly with MRCA's central digital computer, the nerve-centre of every attack mission and the central sorting house for all operational information on board.

The concept is really not so strange. Equivalent systems for using computers in industry and transport services are accepted as routine equipment on the ground. It is natural that the air should follow. Perhaps the technological conclusion is that, for once, electronics is leading aviation. Avionics are having in run to catch up with the techniques developed in the fast-moving computer world.



Head-up displays like this Elliott system for American attack aircraft allow the pilot to see all necessary instrument and guidance information in instinctively understood symbols without taking his eyes off the outside world.

مكتبة الأمل

More than a third of the UK avionics output is exported

by Kenneth Owen
Technology Correspondent

Britain's aviation electronics industry reflects the demand for increasing automation on board aircraft in three main ways. First, avionics has risen in importance to represent in many cases almost an equal one-third share with the airframe and engine in terms of value.

Secondly, avionics equipment is specified from the outset of an aircraft's design and, indeed, has come to influence the design of the airframe itself.

Still a fragmented industry

In most of the collaborative projects the industry believes that British avionics has suffered in the work-sharing arrangements because of the greater importance attached to the airframe and engine elements.

The danger of purchase of avionics equipment by the Ministry of Defence (Procurement Executive) by expediency from the shelves of overseas competition is the biggest threat to the avionics industry.

The association urged the formation of a vigorous avionic policy-making body to ensure, particularly in long-term government sponsored collaborative projects, that the United Kingdom industry can maintain its technological lead and be used to satisfy the requirements for defence equipment.

The British industry's output of electronic equipment for aviation systems

amounted to about £156m last year, according to the Department of Industry. Of this total, about £60m was for airborne equipment (radar, electronic navigational aids, radio communications equipment, telemetry and guidance systems and other airborne equipment); and the remainder for ground equipment (flight simulators, trainers and teaching aids, radar, and fixed and mobile radio communications).

Over one-third of the industry's avionics output is exported, but the Electronic Engineering Association called attention in its annual report earlier this year to rising imports.

The ground and airborne radar and navigational aid markets both suffered further from import penetration, the association commented.

A "great improvement in exports of airborne equipment" was noted. Nearly one-third of trade in this sector is with EEC countries and the balance moved further in the United Kingdom's favour in 1973. But imports from Japan and the United States rose sharply.

Among the main competitors in the international avionics business are Marconi-Elliott Avionic Systems (which claims to have the world's largest avionics product range), Sperry, General Electric (US), Ferranti, Autonetics, Honeywell, Boeing, Lear Siegler, Smiths Industries and Plessey. Among other companies in Europe which include avionics in their business are Bodegwerk, Geratetechnik, Solent, Microtechnica, OMI and Aerialia.

The industry is still fragmented in the United Kingdom. Other British companies in the avionics business include British Aircraft Corporation, Burodept, Cosser, Decca, EMI, Hawker Siddeley Dynamics, Lucas, Marconi, MEL, Eye, Racal, Rediffon, Solarton and Ultra.

The industry's products cover a wide range—more than 70 product categories are listed, from acoustic detection systems to weather radar, in the EEA's classified index. Two unusual, specialised applications are the electronic control of jet engines, demonstrated by Lucas Aerospace; and Smiths' ground-roller guidance equipment for British Airways' Lockheed TriStar.

A significant example of industry-government collaboration in avionics was announced last November. Plessey Radar, the Ministry

of Defence (Procurement Executive), the Civil Aviation Authority and the Department of Trade and Industry (now the Department of Industry) are engaged in a film programme to continue development of a microwave landing system (MLS).

This will lead to a submission to the International Civil Aviation Organization. Standard characteristics of the future landing guidance system for worldwide adoption are scheduled to be decided by mid-1977.

Missile guidance systems

Research and development contracts placed by the Ministry of Defence with British industry have included airborne interception and airborne early warning radar developments, advanced tactical communication and homing systems, television surveillance and missile guidance systems, advanced flight control systems developments, including "fly by wire" and "fly by light" (optical data transmission), advanced sonics processing and display systems for anti-submarine defence, and advanced processors and cockpit displays.

A trend in the industry which has spread from the United States to Britain is the setting-up of "package" type businesses, divisions or companies to provide complete electronic and electrical facilities for airports. These facilities, such as navigational aids, lighting, primary electrical power communications, closed-circuit television and information networks, are supplied on an all-in "turnkey" basis.

America's dominance has international advantages

by Pearce Wright

A recent analysis of possible shortages of raw materials and likely trends in inflation in the United States aerospace industry showed some sharp differences of opinion between management planners working for big companies and government economists in Washington.

The commercial economists were particularly gloomy about prospects in those sectors of the industry that depend on the more costly materials and manufacturing processes many of which are essential for producing advanced electronic systems. Such systems are needed for avionics equipment, computers, radar units, earth stations and intricate devices that go into black boxes.

This vast array of apparatus is clearly of this advanced technology underwritten largely by defence requirements discouraging to compete against, but they benefit to some extent if the American avionics sector remains commercially healthy.

The stimulus behind the United States industry stems from a combination of weapons development, civil aviation projects, and space research and development. Indeed avionics equipment accounts for at least 30 to 40 per cent of the value of a missile, spacecraft or aircraft. In some of the scientific satellites this proportion is higher.

The broad range of work done by the Americans provides a fillip internationally by widening the number of uses to which new technologies can be applied in space and aviation. It would be unlikely that the Americans

could hold the lead in all these fields unless they acquired a monopoly of the world's science and engineering intellect to match their government investment in technology.

Nevertheless so far there are more areas in which the United States industry is technically ahead of its competitors than not. Hence there is a direct advantage in establishing technical licences with United States concerns for products that otherwise take many man-years to develop.

Keep control over exploitation

The dominance of American companies in this section of industry has not been affected so far by European Commission manoeuvres. Most of these manufacturers naturally want to make a profit for themselves and so are reluctant to yield even a small corner of the market: their instinctive reaction is to keep tight control over exploitation of any product or technology which gives them a lever in the market-place.

A good example of this attitude has been in electronic components, computer systems and electronic instrumentation, which are based on the most advanced semiconductor circuits. On several occasions the American industry has been unwilling to part with the knowledge of semiconductor manufacturing until either a overseas company has almost caught up with the development or Nato military commitments made it politically desirable to have new approved suppliers of equipment.

The most recent of these reluctant negotiations over semiconductor circuits was led by Mr Heath and his Government. Several electronics firms in Europe were seeking to license the technology for a special type of electronic device. As France gave equal chances of discovering the best answers in such questions.

Somehow the liberal attitude shown to what might be considered subjects of intellectual freedom declines. The avionics in-

dustry had recovered so successfully from the previous 12 months from military cuts that the electronics sector made record profits. Renewed difficulties followed the fuel crisis which in the United States included the Arab oil embargo, and gave rise to a number of slump conditions round the corner.

The most optimistic seers were prophesying an unpredictable year at best and more likely a time of turbulence for the first quarter of 1974 showed a totally different situation. Sales were \$1700m. If they continue at this rate—and the indications are that they will—then the total of \$5,300m for 1973 should be passed.

At present the American avionics industry seems to be demonstrating the truth of the dictum that a healthy home base provides the platform for generating a profitable export one. Resignation and impeachment have notwithstanding, the Nixon Administration's relations with the Middle East and Soviet countries opened useful markets for the avionics producers.

A more encouraging development from the viewpoint of the European industry is a special scheme by the United States Air Force to promote technical collaboration through a European office of aerospace research and development. The idea, known as a "window on science" project, aims at attracting proposals for developments from European teams that might have a particular application to American needs or be ideal for joint development when married with complementary work in the United States.

These programmes extend from an interest in long-term fundamental investigations using wind tunnels or simulators to more immediate practical issues such as designing instruments to check whether certain types of instrument panel accelerate pilot fatigue.

However, these are essentially topics covering common problems of aircraft and other vehicle design, operation and maintenance. Fundamental research in a first-class research institution in the United Kingdom, a university in Germany or industry laboratory in type of electronic device. As France gave equal chances of discovering the best answers in such questions.

There's always a new challenge in flight simulation



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Air traffic control gets powerful lift

Two years ago the Civil Aviation Authority announced that it was ready to make a major advance in the automation of air traffic control in the United Kingdom. By 1975 a powerful defence and air traffic control, civil and military elements. A decision to do this needed development of the facilities at the London Air Traffic Control Centre at West Drayton.

This system should meet the main needs of the air traffic control service until the early 1980s, the CAA said, providing an environment in which the growing air traffic could continue to operate with a high standard of safety.

The authority said: "The computing base aims to automate many tasks currently undertaken by controllers. These include the handling of flight plan data, the transfer of information between controllers within the London centre and adjacent European centres. It also includes the addition of radar data processing to provide fully labelled synthetic radar displays."

For British industry, the authority went on to give both bad news and good news. First, the bad news: "The system will include the central processor equipment developed for the United States Federal Aviation Administration for their large ATC centres, and the FAA has generously agreed to provide its developed software. This system is called the 9020D, is based on IBM computers and is already in operation at a number of United States centres."

Next, the good news: "Associated with it will be a complex of display systems involving computers which will be provided by United Kingdom industry. The electronic data display system associated with the central processors will use a British invention, the touch wire display system, as developed by British industry for air traffic control, and Marconi will be invited to provide this."

The system would provide a base for the continuing development of ATC automation in Britain, the CAA said. It would enable the authority to plan to provide controllers with automatic warnings of potential collision hazards. One of the most was expected to be more than £20m, of which more than £15m would be spent with British industry.

Bahad this decision to adopt the American 9020D was an earlier, unsuccessful attempt to develop a single British automated system which would combine both defence and air traffic control, civil and military elements. A decision to do this was taken in 1962, but it was found that the data-processing requirements for ATC were very different.

Even within the ATC area, there were differences in handling the military and the civil traffic. Problems arose because of a lack of understanding of the size and complexity of the total system, and software; and the computer hardware was not powerful enough for the job it was intended to do.

As envisaged, the all-in system known as Linesman/Mediator would have inter-linked two main processing systems, each with two main inputs. One system would process radar data, the other flight-plan information; radar inputs were from defence and ATC, while the flight plans were those for military and civil aircraft respectively.

In practice, the end-product was a data-processing system based on three main hybrid computers, which could cope with only a half of one of the two main jobs. It could not handle the combined radar, and it could cope with either military or civil flight plans, but not both. It was decided to use the Myriads for military flight plan processing.

Meanwhile, other countries had moved on to more advanced data-processing systems for air traffic control. Britain had in effect lost about eight years in the abortive Linesman/Mediator project. There was a need to catch up rapidly, hence the decision to adopt and adapt the American system.

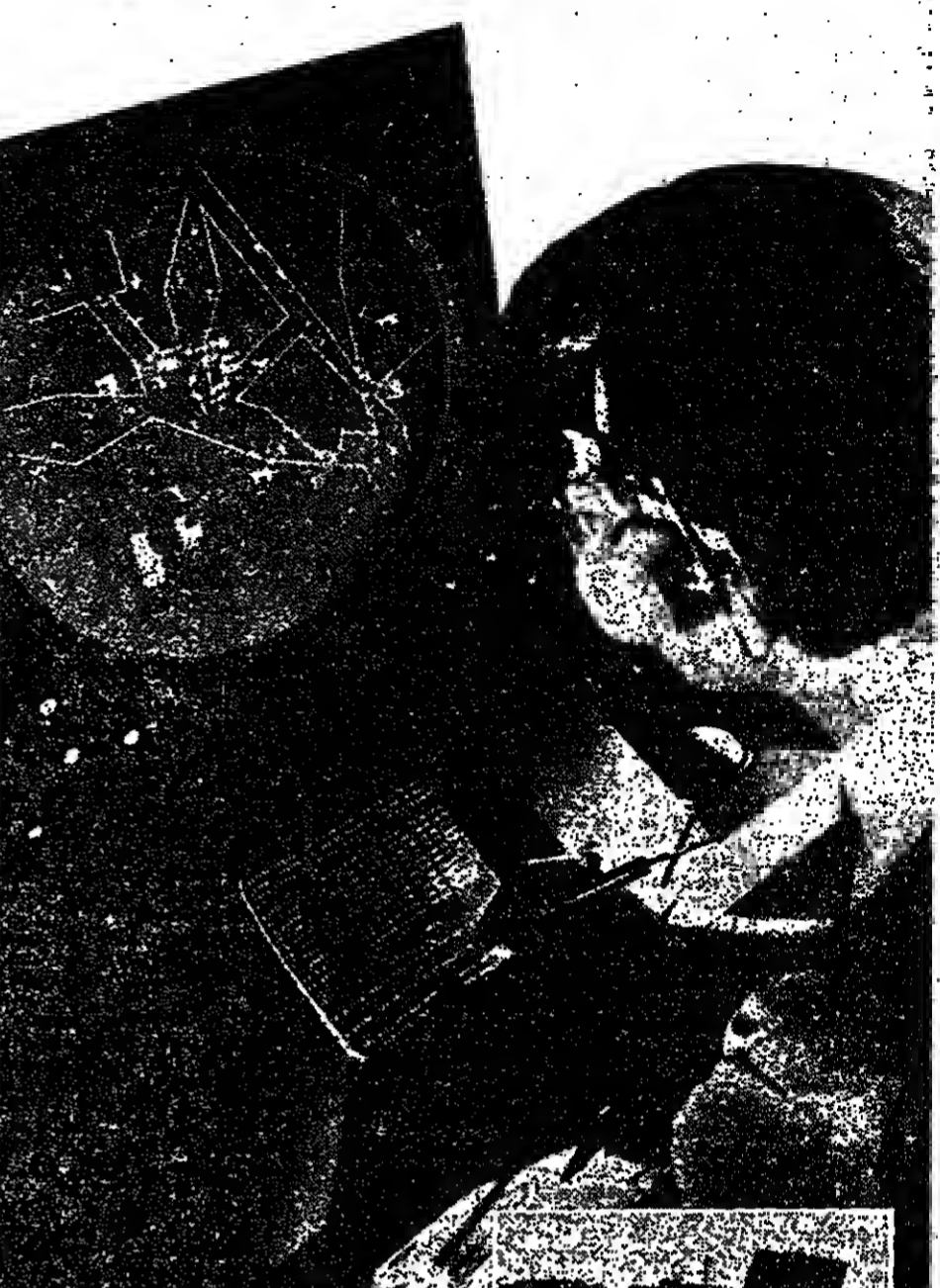

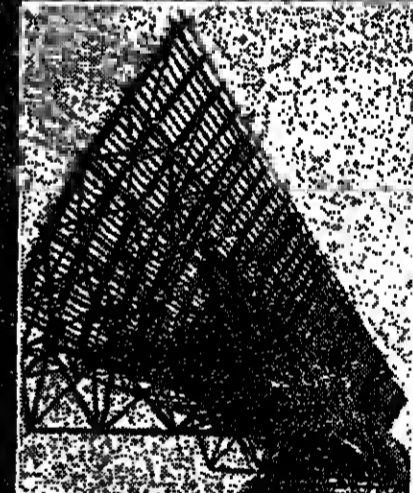


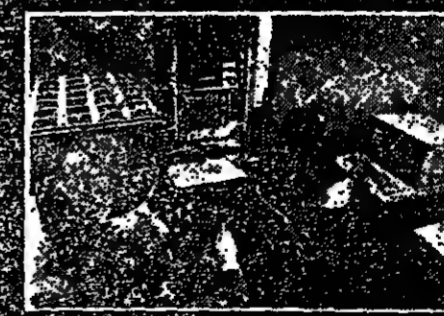

The IBM system is being tested at West Drayton, and should come into service, as planned, early next year. Initially it will handle civil flight plan data processing, while the Myriad unit continues to handle military traffic, with on-line links to Heathrow, Gatwick and Manchester.

Later it will take in radar data-processing also, providing information from all radar stations in a massive, composite data base held in one computer. At present, controllers have to select one particular radar for their display.

K.O.

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GEC-Marconi Electronics

Control techniques developed for Concorde will play vital role in future safety

by Group Captain E. G. Palmer
Flight Controls Division
Marconi-Elliott Systems

After more than a decade of design, development and debate, we are now entering the era of supersonic passenger operations. Concorde has demonstrated startlingly low journey times on actual airline routes and has already "lapped" the Boeing 747, completing a double transatlantic crossing in under the time normally taken for a single journey.

This quantum jump in speed will tend to shrink airlines' long-haul timetables to the point where service frequencies approach those of short-haul subsonic jets. The avionics developed for Concorde will play a vital role in enabling these operations to take place safely.

Primary requirements for supersonic transports are accurate flight profile control to permit maximum payloads to be carried at minimum fuel cost, achieving good handling qualities over a wide range of speeds and altitudes and making pilot workloads compatible with the present loop-haul jets operating at only two-

fifths the speed. This has placed special requirements on avionics systems for flight control and engine management as well as calling for the full range of avionics navigation, communications and instrumentation systems with which airlines are normally equipped. Like other long-range jets, supersonic transports carry inertial navigation systems as a self-contained means for making accurate passage across oceans and uninhabited terrain.

For both Concorde and the Russian Tupolev 144, great emphasis has been placed on the design and integration of their avionics flight control systems. Many of the techniques called for, which seemed so advanced 10 years ago, have gradually gained acceptance on more recent subsonic airliners and other aircraft, a fact which gives credit to the judgment of the SST designers at the time.

To take the flight control systems as an example, use of electrical signalling between the pilot and the relationship between movements of pilot's controls and of the flaps and rudders which manoeuvre the air-

craft. All supersonic aircraft exhibit a wide range of control sensitivities throughout their speed range and electrical signalling provides very precise control at all speeds. Most airlines now use avionics systems for augmenting stability and supersonic transports are no exception. The SST uses automatic stabilization in pitch, roll and yaw and automatic throttle controls are also available as full-time aids to piloting.

Concorde's automatic flight control system provides 33 functions, twice the number for subsonic jets, and push-button controls ensure ease of selection by the pilot. The flight profile control, especially stringent during transition and in supersonic cruise, is selected by a single "max" autopilot, selects the appropriate modes which control the aircraft's climb out and engages INS mode for azimuth steering, once air traffic control conditions permit. His hands and those of his co-pilot will be free while integrating these controls with the overall navigation systems and to handle check lists. Subsonic conditions are

reached as quickly as possible and transition to supersonic flight. When this is obtained, "max operating" mode is selected and the aircraft accelerates, first at constant indicated air speed, gaining altitude until, near sonic speed, a Mach number-dependent acceleration takes place. Once acceleration is complete, the cruising phase begins at constant Mach number, automatically controlled to a value depending on atmospheric conditions.

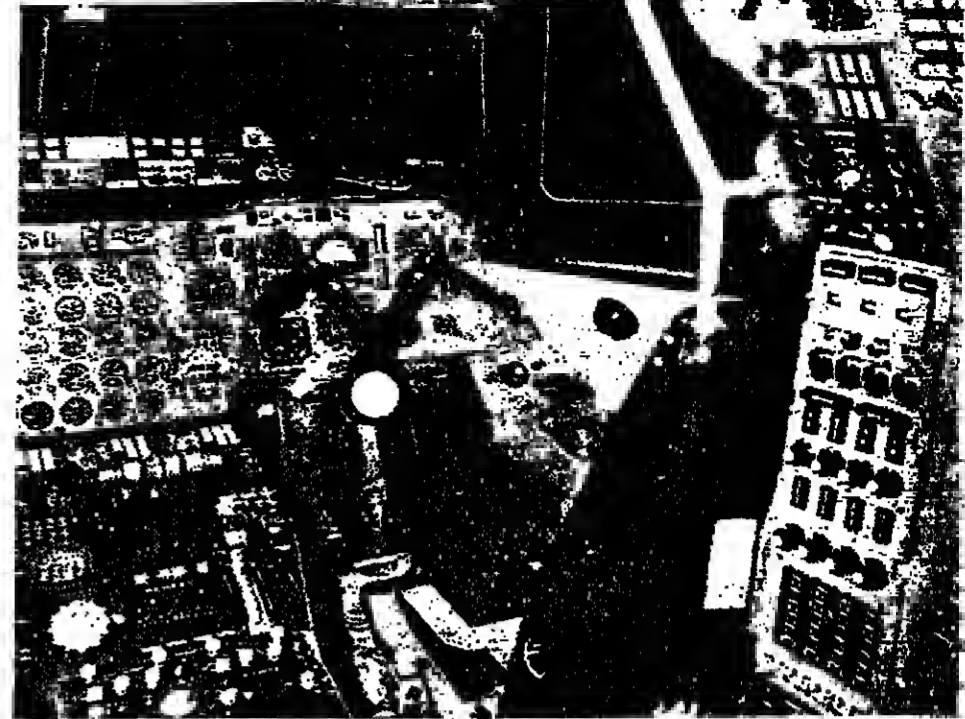
The aircraft remains in "max operating" mode throughout, being steered in azimuth between the selected waypoints and climbing steadily as the fuel consumption, notably weight. Descent from supersonic cruise is again a push-button operation for automatic transition to a preselected altitude. Selection mode causes the instrument landing system to be engaged and guidance to the runway threshold is automatic. Flare out and landing take place automatically and reduce drag and fuel consumption. In such advanced cases, avionics can provide good stability and handling qualities with the centre of gravity position at a maximum for take-off and can relieve structural loads and aero-elastic effects making for lighter, more efficient structure.

Flight control systems are installed, each of which automatically identifies its own failures, either being capable of full control. Although they comprise 16 computers, containing some 4,000 microelectronic circuits, the reliability has been shown to be consistent with modern airline operating requirements.

For the next generation of SSTs, avionics holds out exciting new prospects for even greater efficiency. Reductions in the volume of electronics and simplification of the cockpit can come from advances in airborne digital processors and displays, systems which the United Kingdom already exports extensively, notably to the United States. In addition, the latest advances in "fly-by-wire" techniques can help designers to simplify the airframe even further and reduce drag and fuel consumption. In such advanced cases, avionics can provide good stability and handling qualities with the centre of gravity position at a maximum for take-off and can relieve structural loads and aero-elastic effects making for lighter, more efficient structure.

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Concorde's flight deck with push-button controller, part of its advanced avionics flight control system.

Pioneer automatic landing system

by R. H. Ashforth
Smiths Industries

The automatic pilot in the Trident is the major part of the flight control system installed in one of Britain's most successful passenger aircraft. The Trident not only had the first automatic landing system of its kind but many of its features have since been adopted for the flight control systems of later types of aircraft. Both the Trident and the A300 Airbus incorporate the fail-safe concept which Smiths Industries pioneered in the early 1960s.

The company, in association with Hawker Siddeley and British Airways (then BEA), revolutionized the control concept for automatic landing systems and this was recognized by the granting, for the first time, of a Queen's Award for the design and development of an automatic landing system. From its inception, the Trident system included provision for the automatic acquisition of selected height, a descent lock and a mach lock as well as the first application to a civil aircraft fleet of automatic engine throttle—features which are now taken for granted.

Since the original design the equipment has been developed to include a facility

for automatically maintaining the aircraft on the runway centre line during the initial deceleration after a landing. Control of the auto-land programme has been as follows:

In April 1964 the Trident entered BEA service and automatic approaches to a height of 200ft above ground level with a forward visibility not less than 800 metres were allowed. The next year's certification was granted for autoland in clear weather and in November 1966 a practical demonstration was given at Heathrow of the Trident's ability to land in fog when the forward visibility was only 50 metres.

In January, 1968 the auto-land weather minima were reduced to 100ft pilot decision height with forward visibility not less than 400 metres: this is known as category 2. After another three years of step-by-step proving, clearance was granted for automatic landings with a pilot decision height of 12ft and a visibility of 270 metres.

In the winter of 1973-74 the certification clearance for landings was lowered to a visibility of 200 metres called category 3A.

The present work programme is aimed at reducing the clearance to allow landings in category 3B con-

ditions with a goal of 100 metres forward visibility.

The three-year gap in the programme, 1968-71, arose because the certification authorities would not allow automatic operation below the category 2, 100ft, "decision height" point until the ground-based instrument landing system (ILS) had the required integrity.

Clearance for landing in 100 metres forward visibility is confidently expected this winter. However, it is likely that this will be the end of the programme.

The autopilot fitted to the Trident was for many years the most comprehensive of its type and is only now being matched by other autopilot manufacturers in later aircraft. It made significant inroads into reducing pilot workload and hence increasing air safety. In fact the head-free visual director (FVD) and ground speed and distance-to-go system developed for the Trident and manufactured by Smiths Industries have both been specified by British Airways for their L1011 TriStar aircraft.

Also the automatic flight control system of the A300 European Airbus has been developed and made with Smiths Industries as the United Kingdom partner company.

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Manchester fleet's new equipment shines in fog

by Malcolm Moulton

The automatic landing system installed on British Airways' Super 1-11 fleet has had an outstanding first winter season since its clearance for use in low visibility conditions. Supplied by Marconi-Elliott Avionic Systems, a GEC-Marconi electronics company, the system is based on an E2000 autopilot, in service throughout the world with many British and overseas operators.

With the Marconi-Elliott system, British Airways' 1-11 can approach and land under category 2 weather conditions, permitting regular operations down to 400 metres runway visual range—conditions which account for the great majority of foggy weather.

To date, the airline has carried out more than 6,000 approaches with the system, 31 of them in fog, when competitors have had to lose business by diverting to alternative destinations.

The Super 1-11 fleet is based at Manchester and provides an international short-haul service for most of Europe. Approximately half the fleet of 18 aircraft serves West German internal routes, including the passage through the famous air corridor to Berlin. The service thus provides valuable export business which,

aided by all-weather regularly, has enabled British Airways to increase profitability and capture as much as 40 per cent of the West German internal market this year, a record performance.

Marconi-Elliott Avionic Systems supplies the whole range of avionics systems which forms the heart of an airliner's all-weather landing system—as well as ground-based equipment for monitoring landing performance.

The on-board avionics systems consist of two main elements—guidance and control. The company supplies one or other of these elements for every British aircraft capable of all-weather landing.

The 1-11's automatic landing autopilot controls the aircraft's flight path and speed automatically from just after take-off until touchdown. This frees pilots from handling the aircraft's controls during most of the flight, enabling them to operate navigation and communication systems more effectively—an important factor in short-haul operations. Equally important are the means for acquiring selected height levels automatically under the direction of air traffic control.

The 1-11 system was developed by the company's flight controls division, working in conjunction with the British Aircraft Corporation and the engineering, operations and maintenance staff of British Airways. Success is due to accurate performance, reliability and extremely simple design. A single-channel monitored system, it automatically detects any failure during an approach, always enabling the pilot to take over control safely. Although this would not permit landing in completely blind conditions, it gives a very high level of all-weather regularity and safety, at a fraction of the corresponding cost of "blind operations".

Maintenance engineers responsible for the Super 1-11 report a high level of

servicability with the system. They are backed by a support scheme, provided by the supplier's aviation service and repair division, which is proving highly cost effective for the airline. The commercial benefits arising from category 2 operations are thus being achieved within normal levels of maintenance effort and cost, a fact that has won praise from the airline's management and staff.

Concorde's automatic landing system is based on the principles proved on the 1-11 but is a dual-monitored installation, capable of continuing an automatic landing despite any failure. It corresponds, in effect, to two 1-11 autopilots in the same aircraft and is engineered using advanced technology micro-electronics.

well ahead of the aircraft's entry into service.

The great speed of Concorde, which enables long-distance stages to be flown at frequencies characteristic of a short-haul airliner, makes the role of the automatic flight control system as important as that on the 1-11. Advanced operating modes, are provided in keeping with the wide range of speeds and conditions encountered and airline pilots have praised the aircraft and its systems during evaluations under routine service conditions.

Supporting every aircraft's automatic landing operations are numerous ground-based electronic systems, including air traffic control radars and communications systems, airfield lighting and transmitters, ometers to measure visual range in fog. Marconi-Elliott Avionic Systems' special projects division has also produced a unique system which monitors the performance of every aircraft which lands on the instrumented runway at London Airport. Known as ALMS (aircraft landing measurement system), it has been installed by the Civil Aviation Authority to provide data which ensure the maintenance of the high levels of safety associated with all-weather landing.

Essential part of Trident's gear

The principal guidance element is the instrument landing system, ILS. The company's AD 270 ILS receivers, together with air-to-ground radio communication systems form an essential part of the Trident's automatic landing system. Control, on the other hand, is provided by automatic pilot systems which the company supplies for the Super 1-11, VC 10 and Concorde.

Evaluations under service conditions

The flight controls division has worked in conjunction with SFENA in France in developing the system which is supplied jointly to Aerospatiale, the aircraft company responsible for Concorde's flight control. A considerable number of automatic landings have already been accomplished,

PLESSEY

Worldwide, aerospace is an important market for Plessey

From engine starting and fuel management systems which get (and keep) today's civil and military aircraft in the air, to the instrument landing systems which bring them safely down, even in the poorest weather, Plessey is there. Plessey navigation beacons keep them on course. And it is Plessey radar which helps the air traffic controllers guide them through today's congested air lanes to land safely at airports where the whole electronics, communications and lighting 'package' has been implemented by Plessey as a single contract.

Plessey actuators translate the pilots' commands into action and Plessey communications equipment helps maintain voice contact between ground stations and aircraft in flight. Routine servicing frequently involves both Plessey technicians and spares.

In defence aviation too, Plessey provides all these services and, in addition, supplies purpose designed radar, sonar and weapons control systems plus highly specialised hydraulic and other electro-mechanical components.

Worldwide, Plessey plays an important role in aerospace

The Plessey Company Limited, Ilford

1974

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COURT CIRCULAR

BALMORAL CASTLE
September 2: The Prince of Wales, attended by Squadron Leader David Checkers...

KENSINGTON PALACE
September 2: The Duke of Gloucester, as President of the East Midlands Tourist Board...

Luncheon
Property Services Agency
Mr John Cuckney, Chief Executive...

Latest appointments
Mr J. G. Cuckney, chief executive of the property services agency...

Latest wills
VC hero of 1914-18
War leaves £7,834

Coachmakers' Company
The Election Court of the Coachmakers' Company was held at Fawcett's Hall last night...

Birthdays today
Dame Elsie Abbot, 67; Sir John Brocklebank, 59; Sir Macfarlane Burnet, 75...

£75,000 Premium Bond prizewinner
The £75,000 premium bond winning number is 8 YL 72924.

Forthcoming marriages
Mr J. Dickinson and Miss J. E. Harrison
The engagement is announced between Geoffrey James, elder son of Mrs M. Dickinson...

Mr M. Blake Watkins and Miss T. M. Fryer
The engagement is announced between Michael, son of Mr and Mrs H. J. Watkins...

Mr W. F. Gelson and Mrs J. A. Dear
The marriage has been arranged and will shortly take place between William Francis, elder son of Mr W. F. Gelson...

Mr I. S. Lockhart and Miss R. Cartwright
The engagement is announced between Ian Stuart, only son of Mr and Mrs I. S. Lockhart...

Mr R. M. M. Orr and Mrs M. R. Bloss
The engagement is announced between Robin Orr, of 9 Valley Road, Bromley...

Mr D. C. Parker and Miss K. Beaumont
The engagement is announced between David Charles, son of the Rev Dr T. H. L. and Mrs Parker...

Mr M. E. Seifert and Dr J. E. Morris
The marriage has been arranged and will shortly take place between Martin Howard, son of Dr and Mrs V. M. Seifert...

Mr P. J. Stockley and Miss E. Jones
The engagement is announced between Philip James, son of Mr and Mrs J. Stockley...

Mr E. S. Tudor-Evans and Miss D. E. Boye
The engagement is announced between Edward Simon, son of the late Mr A. G. Tudor-Evans...

Mr R. J. Woodward and Miss C. R. Denning
The engagement is announced between Robert, younger son of Mr and Mrs F. Woodward...

Coachmakers' Company
The Election Court of the Coachmakers' Company was held at Fawcett's Hall last night...

Birthdays today
Dame Elsie Abbot, 67; Sir John Brocklebank, 59; Sir Macfarlane Burnet, 75...



The memorial to Mr Nikita Khrushchev in the Moscow cemetery where the former leader's son, Sergei, stands after helping to erect it yesterday.

Mariages
Mr H. C. Roney and Miss A. P. Cloudeley Seddon
The marriage took place at Chelsea Old Church on Friday August 30...

Mr M. E. Seifert and Dr J. E. Morris
The marriage has been arranged and will shortly take place between Martin Howard, son of Dr and Mrs V. M. Seifert...

Mr I. G. Williamson and Miss E. J. Carbery
The marriage took place on August 31 at the Church of the Immaculate Conception...

Mr R. J. Woodward and Miss C. R. Denning
The engagement is announced between Robert, younger son of Mr and Mrs F. Woodward...

25 years ago
From The Times of Friday, September 2, 1949
From Our Own Correspondent
New York, Sept. 1: Six veterans of the American Civil War...

Receptions
Department of Energy
Mr Varley, Secretary of State for Energy, was host at a reception held at the Hyde Park Hotel...

Science report
N Ireland: Science in troubled times
According to an article in Nature, the practice of science in Northern Ireland is harder than elsewhere...

Museum officers urged to get rid of trash
By Gavin Scott
The Times Educational Supplement
Museums are too much like "high-class trash cans"...

Beef report predicts glut then shortage next year
By Our Agricultural Correspondent
A beef market glut in the early spring of next year by under-finished animals...

Thousands pay homage to Mr Kirk
From Our Correspondent
Wellington, Sept 2
The body of Mr Norman Kirk, the New Zealand Prime Minister...

Leader to visit Chile for church youth
From Our Own Correspondent
Paris, Sept 2
Brother Roger, the Swiss Protestant priest, is to visit Chile...

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Mr David Frost writes:
On arriving back to London in the afternoon...

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Brussels thanks the Welsh Guards

From Roger Berthoud
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OBITUARY MR GEOFFREY HUNT

Editor at Oxford University Press
Elizabeth Knight writes: The religious books editor of the Oxford University Press...

DR. A. R. LEE
Sir William Glanville writes: Few of us as road users know of the debt we owe to Dr Alfred Robert Lee...

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Fly TAP to Madeira for under £6 a day. There's still time to catch the sun in '74. 14 days in Madeira from only £79 for self-catering holiday or from £148 demi-pension. And that includes travel-without-tears flights by TAP international scheduled airliner from Heathrow. Phone or write for brochures to: TAP Portuguese Airways, 21 Portland Place, London W1N 4HQ. Tel: 01-637 3633. We're as big as an airline should be.

THE TIMES BUSINESS NEWS

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SKF world leader in rolling bearings SKF (UK) Limited

17 oil companies link up to build £200m pipeline network to Shetland

Mr Baxendale emphasized that he was expressing the views of Shell and not necessarily other North Sea companies. He also felt that government intervention might slow down the search for the smaller oilfields that would be needed to keep Britain self-sufficient in oil once the bigger reservoirs were past their peak.

£10m dispute ends after Chrysler's pay deal

There was good and bad news yesterday for the 30,000 men laid off in the strike-plagued motor industry. The strike by plastic workers which has stopped all production of Chrysler cars and cost the company an estimated £10m, was called off.

Mr Benn affirms top priority for takeover of Court Shipbuilders

By Peter Hill and Maurice Corina Mr Anthony Wedgwood Benn, Secretary of State for Industry yesterday brushed aside Conservative threats to denationalize the shipbuilding and associated activities of Court Line.

Bonn drafts Bill to tighten bank controls

Bonn, Sept 2.—Dr Hans Apel, Finance Minister of West Germany, said the Bonn government will shortly put forward proposals to tighten up on supervision of banks.

State boards disagree over Bacat charges

Two nationalized undertakings are locked in dispute over the operation of the barge-boarding-cannaman (Bacat) service between Hull and Rotterdam which is already the subject of an unofficial blacking by 2,000 dockers at Hull.

Abu Dhabi deadlock on participation

Abu Dhabi, Sept 2.—Abu Dhabi and foreign oil companies have failed to reach agreement on increasing the Gulf Emirate's share in the companies' operations here.

Marked decline in capital investment reflects companies' lack of confidence

By Mervyn Westlake Economics Staff British companies now appear to be reducing markedly the level of their fixed capital spending. There was a fall of some 34 per cent in total investment by the manufacturing, distributive and service industries between the first and second quarters of this year, according to figures released by the Department of Industry yesterday.

CAPITAL SPENDING table with columns for Investment, Total Mfg Stocks, and various years (1971, 1972, 1973, 1974).

SOBRANIE (HOLDINGS) LIMITED Further Progress in a Difficult Period

The 36th Annual General Meeting of Sobranie (Holdings) Limited was held on September 2 in London. The following are extracts from the circulated statement of the Joint Managing Director, Mr. Charles C. Redstone:—

Mr Shore visits Venezuela after Brazil talks

Caracas, September 2.—Mr Peter Shore, Britain's Trade Minister, met with Venezuelan government officials this week to discuss increasing trade between the two countries.

£2.8m share for San Paulo in compensation

San Paulo (Brazilian) Railway yesterday announced that its share of the £4.3m compensation for nationalization agreed by the Brazilian Government to British companies would amount to 93p a share or almost £2.8m. This will be increased by 75 per cent of the investment currency premium applicable to the sum.

Tunnel cost put at £1,400m

The cost of building a Channel tunnel under today's conditions is likely to exceed the 1973 estimate of £850m by about two thirds, Mr Keith Wickenden, executive chairman of European Ferries, claimed.

W German surplus down

Frankfurt, Sept 2. West Germany's basic payments surplus in July declined to 735m marks (about £120m) from 973m marks (about £160m) a year earlier, Deutsche Bundesbank figures showed today.

President signs law to protect pensions

From Frank Vogl Washington, Sept 2 President Ford today signed the Employee Retirement Income Security Act. He said at the signing ceremony that assets managed by pension funds had been growing rapidly and "it will not be long before such assets become the largest source of investment funds in the country."

How the markets moved

Table showing market movements including Rises, Falls, and THE POUND exchange rates.

SCHOOL FEES AHEAD?

Save & Prosper can help you reduce the burden of school fees through two new school fees plans. Both offer you very substantial savings in the cost of fees and provide a series of guaranteed payments while your child is at school.

Table comparing SCHOOL FEES INCOME PLAN and SCHOOL FEES CAPITAL PLAN with columns for Number of complete years, Monthly contribution, Total outlay, and Lump sum investment.

Form for Save & Prosper Group, 4 Great St. Helens, London EC3P 3EP. Telephone: 01-5648899. Includes fields for Name, Address, and Tel.

UK in line for £3m tool orders from Brazil

Orders worth £2.25m have been won by British machine tool and component manufacturers taking part in the British Industrial Exhibition in São Paulo, Brazil. Final sales by the 41 United Kingdom companies at the show, which closed on Sunday, could top the £3m mark.

BLEU surplus shrinks

The payments surplus on a current account basis for the Belgium-Luxembourg Economic Union declined to 4,100m Belgian francs in the first half, from 24,400m francs a year earlier, according to preliminary figures. The Belgian Finance Ministry said the decline was the outcome of dearer crude oil and petroleum products.

VW's American project

Volkswagenwerk AG's supervisory board met yesterday in Wolfsburg to discuss for the first time the setting up of a United States production plant. But no decision will be taken at least until the next regular supervisory board meeting on November 6, a company spokesman said.

Iran gas pipeline

Turkey and Iraq have reached agreement on a pipeline project which would carry Iranian natural gas 1,900 kilometres to Turkey for shipment to Western Europe, petroleum industry sources said in Ankara on Sunday.

Britten-Norman scoops £6m order from Philippines for 100 Islanders

By Arthur Reed, Air Correspondent. Despite a major sales drive by the American aircraft industry, the second level of British aerospace stole the limelight at the Farnborough Air Show yesterday. Britten-Norman, the light aircraft company based in the Isle of Wight, announced a new order for 100 of its Islanders, 10-seater airliners, worth a total of £6m.

Inexpensive aids to productivity in clothing trade

Work aids designed to produce substantial financial savings and assist Britain's clothing industry in boosting needed productivity because of a continuing decline in the labour force are highlighted in a report, published today. Prepared by Inbucan AIC Management Consultants for the economic development committee for the clothing industry (Little Neddyl), the report describes a range of simply engineered work aids. The aids cost less than £150 to produce, including materials and labour, and many were below £50. *Low Cost Work Aids for the Clothing and Garment Industries, £2.50 from Neddyl Books.

log 650, arc higher than any other previous sales record for a multi-engine commercial aircraft in Britain since the war. A second small British aircraft company which is delighted with the way in which Farnborough is turning out is Short Brothers and Harland, the Belfast-based manufacturer of the new 30-seater airliner, the Short SD 3-30. In spite of all the pressures against smooth production in Northern Ireland at present, the 3-30 made its maiden flight on August 22, three weeks after it was scheduled. Shorts has already announced three firm orders to a third-level operator in the United States, and can be expected to announce further orders tomorrow.

Benn threat holds back private steel investment

By Peter Hill. Investment by independent steel producers is being held back because proposals could be included in the proposed National Enterprise Board's shopping list. This was claimed yesterday by Mr Michael Marshall, the Opposition's link spokesman on the steel industry, after visiting independent steel and wire manufacturers in the Sheffield and Doncaster area. He said he had encountered "grave disquiet" about the prospects of further nationalization. Talks in which Mr Anthony Wedgwood Benn, Secretary of State for Industry, had taken part in June in Brussels indicated that he wished to restrain the activities of the independent steel companies. If present EEC fair competition rules inhibited him, he intended to extend the state monopoly by further nationalization. Mr Marshall, in a statement, said the independent producers—who account for about one-third of Britain's finished steel output by value—were directly affected by the Government's White Paper on industrial policy. "Planning agreements would put an intolerable strain on many small and medium sized companies, but it is the National Enterprise Board which is having the most immediate and dangerous impact", he said. Private steelmaking investment through the capital market had effectively dried up.

US top-level meeting on Franklin's future

From Frank Vogl, Washington, Sept 2. A top-level meeting of officials from several government agencies is scheduled to take place here tomorrow to try to resolve the persistent problems of the Franklin National Bank of New York. The discussion at the meeting will centre on a series of alternative proposals put forward by Franklin and by other banks. Participating will be top representatives from the Federal Reserve Board, the office of the Comptroller of the Currency, the Federal Deposit Insurance Corporation, which insures bank deposits; the Securities and Exchange Commission, the Treasury, and possibly the anti-trust division of the Department of Justice.

Shortages of shipping services

From Mr D. Parker. Sir, I write with reference to your article printed on August 15 entitled "Growing Shortage of Shipping Services" relative to the trades from the Indian sub-continent to Europe. The article is based on two conclusions drawn in the opening paragraph: firstly, that rising freight rates are inhibiting growth in India's exports and secondly, that there is an increasing inadequacy of shipping services. There are, of course, direct links between the two. A shipowner is confronted with increasing losses in a particular service there must come a time of curtailment and possible departure, particularly if profitable shipping services are available elsewhere. Most cargo line operators have a long tradition of service to a given trade, and this is particularly true in the Indian trade where the conference was first brought into being nearly 100 years ago—but tradition is not shown in the share-holders' balance sheet. That there has been worldwide cost inflation during recent years is incontrovertible and shipowners have not been the least affected. Indeed, it is relatively common knowledge that a very large proportion of their costs are outside their direct control—port charges, bunkers, stevedoring, insurance and repairs are all examples where costs are determined and are applied by independent authorities, unions or companies. Indeed, particular emphasis must be placed upon the appalling deterioration during recent years in the productivity of most of the United Kingdom ports served by the Conference, of long berthing delays, of greatly increased costs and of such a decline in the daily rate of discharge and/or loading that it has recently become cheaper and quicker for many United Kingdom cargoes to be discharged at continental ports and thereafter transhipped to such ports as Felixstowe.

LETTERS TO THE EDITOR

Wealth Tax and the viability of houses

From Mr Michael Gibbon. Sir,—Professor Ian Little, in his article on August 29, writes of the "problem of threatening the viability of businesses". I wonder what will happen in the viability of dwelling-houses if, as he predicts, we have a Healey tax rather than a Little tax. Suppose you have an elderly man living with his elderly wife on an income from savings that is barely enough to pay his income-tax, his rates, and to keep body and soul together, in a moderate family house full of family possessions. Suppose his investments are worth £30,000 and that by a "spot check", his house is assessed at £10,000 (this is by no means an absurd example) with the total "wealth" coming out at £105,000, the old man is liable to wealth tax. How does he pay it? He cannot sell investments because he could then no longer afford to exist. Perhaps he begins by selling the furniture for his furniture tax.

Shortages of shipping services

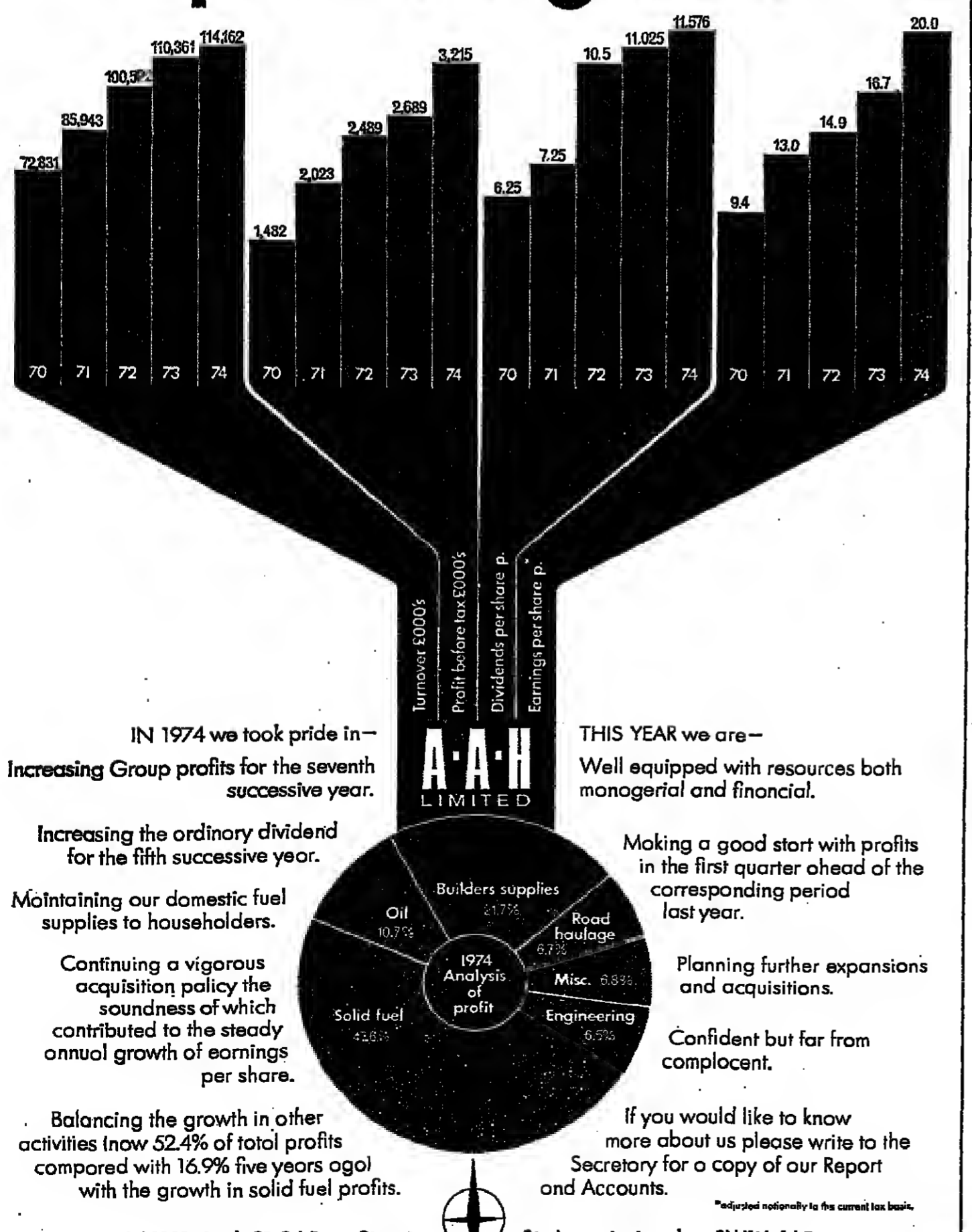
The immediate additional costs to the lines will readily be appreciated; it must be hoped that for the greater good of the country, dynamic remedial action will be taken. It is in this context that the Conference has, during recent years, been compelled to increase freight rates more frequently than in previous years, for it is a matter of record that between 1957 and 1971 only two general rate increases were introduced in the westbound trades, namely 10 per cent in August, 1963 and 7.5 per cent in September, 1966. The article claims that the Conference has deteriorated into a body which has eliminated price competition and that it merely pools its profits. While this conclusion contradicts an earlier suggestion that losses in the westbound trade require to be subsidised by profits in the eastbound trade, it entirely ignores the basic fact that the combined and "pooled" resources of all the lines are far better able to effect the economies necessary to provide services for the low-value commodity exports from the Indian subcontinent. Neither is it correct to conclude that lines participating in the pool automatically share in the "profits"—the pooling relates to the shares of the trade and not to the results of that trading—and unfortunately these results have been lost in the westbound trade. A share is only earned after the line has provided the full service represented by their pool share. It is claimed by the article that "new members of the Conference" are scrupulously kept out" but while this is factually incorrect in the case of the India-Pakistan-Bangladesh Conference, it ignores the axiom that any so-called "closed" Conference trade which is profitable will inevitably attract non-Conference shipping services. No such services have been offered to the westbound trades from India for many years. Another aspect in which the Conference has been faulted in the article relates to the Currency Adjustment Factor introduced subsequent to the devaluation of the Indian rupee (US dollar), and the fluctuations in the currencies in which the rates and shipping services are provided. Here again, the comment is based on an insufficient knowledge of the facts, for the C.A.F. action taken by the Conference fully accords with the procedure agreed by European Shippers' Councils and the European National Shippers' Association, which procedure has been discussed with and agreed by shippers' councils in the Indian subcontinent. There are other aspects of the Conference services which could well be commented upon but it should at least be made known that the Conference has, for over a decade, consulted with shippers' councils over such matters as general rate increases, and provided them with full details of the trading results of the Conference Lines as a body. It has illustrated the pattern of its services and the need for securing a quick turnaround of vessels and thereby keep the general level of its freight structure within control. It has also applied the policy of providing to the national lines a proper participation in their own trades, all of which has preceded the principal recommendations embodied in the United Nations' Code of Conference Practice. Yours faithfully, D. PARKER, Secretary, India Pakistan Bangladesh Conference, St James's Road, East Grinstead, Sussex.

Air traffic control advances at Farnborough

Significant advances in the application of computing to air traffic control in both Britain and the United States are being demonstrated at the international air show at Farnborough this week. A new Marconi concept in distributed computing is to be implemented at the Scottish air traffic control centre at Prestwick, while the American authorities have selected Burroughs to provide the next stage in the national plan to automate air traffic control in the United States. For the Prestwick centre, Marconi Radar Systems is to supply a system based on 33 of the company's recently announced Locus 16 processors. This contract placed by the Civil Aviation Authority, is worth almost £1.5m. Information on the position, height and identity of aircraft flying over Scotland will be passed from radar sites (In Scotland, Northern Ireland and northern England) via telephone lines to the Prestwick centre. This information will then be evaluated by four of the Locus processors and passed to 29 display units, each of which is driven by a single Locus. Twenty-five of these are operational displays used by the air traffic controllers. This "distributed" approach to the processing of the radar data and the presentation of aircraft information on the controllers' display screens is an alternative to the use of a large central computer system where all the processing is concentrated in one place. Mr John Sutherland, managing director of Marconi Radar Systems, said yesterday at Farnborough that more than 60 Locus processors had been sold to date. On the United States Federal Aviation Administration stand Mr Charles Dowling of the FAA reported that Burroughs had been chosen to supply computer-based systems for over 70 airports in America. This followed an experimental system supplied by Lockheed. These are airports which require relatively modest levels of automation. In some of them the controllers' displays will be readable in daylight in the control tower "cab" (from where the controllers view the airport) and will not have to be in special radar control rooms. This program known as Automated Radar Terminal System (ARTS)-2, represents the third phase in the automation of air traffic control in the United States. The two other phases have already been implemented; they cover on-route flying, and flying within a 50-mile radius of the major airports, respectively. For on-route control, large IBM 9020 computer systems (similar to that now being installed at West Drayton) are used at 20 regional centres across the country. For terminal control at 61 of America's busiest airports, Univac systems have been installed under the ARTS-3 programme. These give more comprehensive processing than will be provided by ARTS-2; both systems are designed on a modular basis to accommodate future improvements. Kenneth Owen

Computer news

A picture of growth.



Established in 154 Countries AEG-TELEFUNKEN

The Federal Republic of Germany is one of the leading industrial countries which has a limited home market. We all live by buying and selling on an international basis. In times of rising costs for transport, raw materials and manpower, this requires world-wide partnership. And so, for decades, we have been concentrating on countries with a future. On prospective markets. Today, one in seven of our people, 25,000 in all, work abroad. One third of our turnover of twelve billion DM comes from abroad, through manufacturing and marketing organisations all over the world. And by direct export. In the past business year we were able to establish new subsidiaries in 14 new countries. This is just an indication of how know-how spreads. Fast and faster. World-wide.

Our electronics factory for entertainment and communications equipment in São Paulo, Brazil.

Summarised consolidated balance sheet closed on 31st December 1973

Assets	1973 DMm.	1972 DMm.	Liabilities	1973 DMm.	1972 DMm.
Fixed assets	1,394	1,347	Issued share capital	704	704
Financial assets	755	864	Reserves	891	891
Fixed and financial assets	2,069	2,211	Minority interests	55	60
Differences arising on consolidation	182	175	Shareholder's equity	1,655	1,655
Inventories and work in progress	1,556	1,634	Liabilities long-term	2,180	2,067
Receivables	2,602	2,628	medium- and short-term	3,405	3,513
Liquid assets	822	542	Total liabilities	5,585	5,568
Current assets	5,080	4,904	Distributable net profit	60	70
Balance	7,301	7,290	Balance	7,501	7,290

The annual general meeting held on July 12th 1974 resolved a dividend of 5.—DM per DM 50.—share for the business year 1973. Copies of the complete Annual Report may be obtained free of charge from AEG-TELEFUNKEN, Finanzverwaltung, 6 Frankfurt 70, AEG-Hochhaus, W.-Germany.

Barlin and Frankfurt (Main), in July 1974
 ALLGEMEINE ELEKTROFACH-GESSELLSCHAFT AEG-TELEFUNKEN
 Board of Management

AEG TELEFUNKEN

BY THE FINANCIAL EDITOR

Lloyds: no bank is an island

The last thing Lloyds—or any major British bank—wanted was a reminder that they, too, are vulnerable to expensive "irregularities", however conservative their policies and how ever rigid their safeguards.

to make an individual choice. Arrangements are probably being made, then, whereby shareholders will be given the chance to assign their shares to an independent United States stockbroker with a minimum of administrative trouble.

a share, but on top of that has to be added the investment currency premium (less 25 per cent forfeit under the surrender rule), which brings the total up to 122p.

House of Fraser

Bucking the trend

What stands out in the House of Fraser figures for the six months to July 27 is that the group is gaining market share from other department store groups, with Debenhams perhaps the most obvious victim.

Foreign bids Little overseas interest

If anyone becomes from the planning in the market, it is the large, cash-rich company that suddenly finds that it can acquire additional manufacturing capacity on the cheap.

H. Samuel

An untypical pattern

For the moment, at least, disaster has been averted for Italy. Just as the country's economy was slipping to such an extent that United States bank examiners were being ordered to look on loans to the country as "problematic", the West German Government has made a loan of \$2,000m.

Farmers caught in the middle of the food price tussle

Shoppers were told at the beginning of last year that because of beef was dear was that much of it was going to Japan at prices we could not afford.

forecasts, the consumer may be disappointed. But if calves can be sold for 2p each why is beef still so expensive?

Mr Peart will be at preliminary talks to Brussels today with the exhortations of NFU leaders ringing in his ears.

up. On beef the NFU said yesterday that good cattle were fetching £18 a live hundred-weight, far less than the cost of production.

Funnelling North Sea oil to Shetland

Early next April American offshore engineers, J. Ray McDermott, will begin laying the first section of the 93-mile long pipeline from Sullom Voe in the Shetland Islands to a cluster of oilfields close to the boundary with Norwegian waters to the north-east.

At least the food processing industry gets it right. When Mr Michael Vernon, chairman of Spillers, said last year that he expected a 17p loaf by the spring of 1974, he was only a penny wrong.

But a straight handout from Brussels will not alone be enough to encourage British farmers to take a confident view of the long-term future.

Mr Peart may be more willing than Mr William Secretary for Prices and Consumer Protection, to let the price go

initially the five groups pumping oil into the Shetland Islands will be producing 300,000 barrels of oil a day, but by 1980 the pipeline will be operating at its maximum capacity of one million barrels.

Italians live off borrowed time

The Milan stock exchange went up by 50 per cent. For Italy's workers, too, the 1974 wages were profitable time. Wages rose 21 per cent, far outstripping the 12 per cent rise in prices which was the product of tight though erratic price control measures by the Government.

But it has a more immediate significance, too. Any austerity programme which is going to have a chance of success will have to rely heavily on union support.

But it has a more immediate significance, too. Any austerity programme which is going to have a chance of success will have to rely heavily on union support.

But for companies faced with the threat of partial nationalization, a trebling of offshore construction costs in two years, and the most unfriendly operating environment in the world, just how this dilemma will be resolved is the least of their worries.

San Paulo Railway Thoughts for the future

It is a sobering comment on the level of stock exchange turnover that the San Paulo Railway, which has just 3m shares in issue, should have been the most actively traded stock in the market yesterday.

Interim: 1974-75 (1973/74) Capitalization £54.2m. Sales £134.08m. Pre-tax profits £6.53m. (£6.87m). Dividend gross 1.87p (1.68p)

Interim: 1974-75 (1973/74) Capitalization £15.2m. Pre-tax profits £1.73m. (£0.98m). Dividend gross 1.25p (1.25p). Forecast first interim.

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Business Diary: Cuckney's new property • Lugano story

There seems some surface irony in the appointment last night of Mr John Cuckney, the highly regarded banker and industrialist, as new man at the Crown Agents.

it is precisely those skills acquired in the private sector which will be the key to Cuckney's new, challenging job.

Quick work

It is hard to decide whose achievement was the more remarkable: Marc Colombo, who apparently ran up hundreds of millions of pounds worth of uncovered, undetected foreign exchange positions from his dealer's desk at Lloyds Bank International's tiny Lugano branch; or Robert Gras's, whose task last week as LBI's chief foreign exchange dealer was to close those positions without letting the market get wind of what was happening.

enough interest to make it worthwhile going into some detail.

ills in Holland

A recent Business Diary article advised British visitors to Holland to first secure good health insurance cover since hospital beds cost £20 a day and foreigners are not entitled to private patients. This has stirred up

enough interest to make it worthwhile going into some detail.

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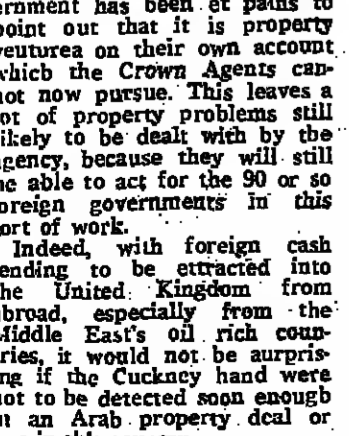
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John Cuckney: new man at the Crown Agents.

goes to the Crown Agents with a salary of £16,500 which is significant of the government view of the ongoing role of the Crown Agents.

For that puts him on a level with the Civil Service permanent secretary. That, and his known drive—he is accustomed to tricky business situations and was the man who sorted out the problems of the crisis-ridden Mersey Docks and Harbour Board—almost certainly means a growing, rather than a diminishing, role for the agency.

Cuckney must feel his job at the Property Services Agency has been done in providing other government departments with property management expertise and services, covering construction maintenance and building supplies. It can now

NOTICE OF REDEMPTION To the Holders of Esso Overseas Finance N.V. 9% Guaranteed Debentures Due 1985

Table with columns for Debenture Number, Amount, and Interest. Includes a list of debenture numbers and their corresponding amounts and interest rates.

Payment will be made upon presentation and surrender of the above Debentures with coupons due September 15, 1975 and subsequent coupons attached at the main office of any of the following: Morgan Guaranty Trust Company of New York, 15 Broad Street, New York, New York, 10015; Morgan Guaranty Trust Company of New York in Brussels, Frankfurt am Main, London, Paris and Zurich; Banca Morgan Vonwiller S.p.A. in Milan and Rome; Bank Mees & Hope, N.V. in Amsterdam; and Kredietbank S.A. Luxembourg in Luxembourg. Coupons due September 15, 1974 should be detached and collected in the usual manner.

FINANCIAL NEWS AND MARKET REPORTS

Stock markets

Stronger performance from gilts

The gilt edged market turned higher yesterday following weekend reports from the United States that the Federal Reserve authorities may relax monetary policies to fight recessionary trends.

At the longer end, gains ranged to around 1/4 of a point. Prices were fully held at the close. Dealers described the buying pressure as "fairly good".

Further cash problems in the financial sector. These fears drove market indices to 15-year lows only a week ago.

Commodities

Tin hits peak of £4,140

Standard tin (cash) closed £3,50 higher yesterday at £4,120.50. Standard (three months) was £35 down and high-grade (also three months) was £40 lower.

was done on a private treaty basis through brokers on the Commodity Exchange floor.

The new market, run roughly on Settlement House lines, will now be guaranteed by the International Commodity Clearing House.

Months quoted are the two immediate single positions—Oct and Nov, followed by eight three-month spread positions from Oct-Dec, 1974, to July-Sept, 1975.

Terminal trading started yesterday morning in a revised London great wool contract, which super-seeded the one launched with little success in Sept, 1971.

The market opened on a steady note to initial dealings of eight lots. Quoted months are 10 Dec, March, May, July, Oct, Dec and March, with a contract unit of 1,500 kilos of clean wool content.

Trading begins in open outcry rubber. Open outcry trading in rubber began yesterday morning with a well-attended but somewhat cautious opening call which lasted about 25 minutes.

Eurobond prices (midday indicators)

Table with columns for STRAIGHTS, CONVERTIBLES, and NON-S BONDS. Lists various bond types and their prices.

Discount market very quiet

Most discount houses found the flow of fresh money yesterday just about adequate in very quiet conditions.

Rates ran a fairly even course. They opened around 10 per cent, varied a little during the morning.

Against the market were the Treasury bill take-up and a very tiny figure for commercial bills maturing in official hands.

US copper fabricators' stocks rise. Refined copper stocks of United States copper fabricators increased by about 25,000 short tons during July.

BRIT BUILDING & ENG. Chairman says current term looks promising with first quarter sales rising 20 per cent.

METROPOLITAN INDS. Board says continued growth is assured, and policies are showing worth.

J. O. WAYKER. Forecasting is hard, but sales this year are good in relation to consumption.

Latest dividends

Table listing dividends for various companies like BHP, Anglo-Siam, etc. Columns include Company, Dividend, and Yield.

Foreign Exchange

Dollar stronger

The dollar strengthened yesterday against most currencies in European foreign exchange markets.

Sterling was relatively active on the day, closing at \$2.3115, down 50 points.

The dollar was quoted at 2.6730-50 Deutsche marks, compared with 2.6625-55 late on Friday.

Gold, formed on the bullion market being quoted at \$19 an ounce, up \$3 on the day.

UK metal stocks

Stocks in London Metal Exchange official warehouses at the end of last week (all tonnes unless otherwise stated) were as follows:

Copper rose by 3,425 to 57,170; tin rose 45 to 1,430; lead fell 825 to 14,825; zinc rose 200 to 18,450; silver rose 180,000 to 11,570,000 Troy ounces.

Walthamstow Stadium

Though the balance-sheet shows that the prolonged stock market slide has taken its toll of quoted investments, down from £2.2m to £994,000, Walthamstow Stadium (one-third owned by GRA Property), regards its future prospects as "most encouraging".

UK earnings acquired by Empire of India

To a move to alleviate the problem of paying dividends out of overseas operations by acquiring United Kingdom earnings, Empire of India Holdings has agreed to purchase from Eastern Produce 400,000 shares in LK Industrial Investments at 20p each, giving a total stake of 20.6 per cent, and also 668,000 shares at 8p in Singlo Holdings, for a stake of 15.6 per cent.

In addition, Empire is to sell for £125,000 cash to Eastern its 50 per cent stake in Kapsombewa Tea, a company operating in Kenya. The proceeds of the sale will assist in the LK and Singlo share purchases.

The other 50 per cent of the tea company is to be bought by Eastern from Singlo for the same price. This sale will give Singlo the advantage of having tea estates solely in India.

£14m finance for Dubai cement plant

The Export Credits Guarantee Department is to guarantee a £14m loan which Lloyds Bank has made available to the ruler of Dubai for use in the construction of a new cement plant.

The contract, worth £26m, has been awarded to Costain Civil Engineering. The plant, which will be the largest in the Gulf, will come into commission early in 1978. It will have an output of 500,000 tons a year.

The ECGD is also guaranteeing a loan of £2.96m from Williams & Glyn's Bank for extensions to the Kipevic power station in Kenya. The loan will be made to the East African Power and Lighting Co.

HUTCHINSON-MAPA-SALPA. French rubber products group, Hutchinson-Mapa plans to take control of Salpa which operates in same sector and recorded 1973 turnover from ITS 12 subsidiaries of some 440m francs.

ANGLO-INDONESIAN PLANTATIONS. Chairman says group has ample cash with which to invest in industrial projects both inside and outside Indonesia.

BROWN BROTHERS. Brown Brothers & Albany name has been changed to Brown Brothers Corp.

ETIDLE SELECTION. Hoare & Co. Govett, acting on behalf of investment clients has sold 31,620 shares (16.4 per cent) of Etidle Selection. French registered unit trust for 3,84m francs to Banque de l'Union Maritime at Financiere.

Ayer Hitam: Estimated net profit for year to end June amounted to £1.05m (£649,000). Dividend totals 14.5p (13.5p). North Broken Hill: Net profits for year to end June rose from \$45.50m to \$10.2m on more output up from \$19m to \$31.9m. The dividend total was up from 71c to 9c a share.

Bank Base Rates

Table listing bank base rates for Barclays Bank, Hill Samuel, etc. Columns include Bank Name and Rate.

PHOTOPIA INTERNATIONAL LIMITED

Fourth Successive Year of Record Sales and Profits - Profits Before Tax Multiplied over 4x in past 4 years.

Charles G. Strasser, Chairman, reports: Turnover M£5.6 (M£3.7). Pre-Tax Profits £577,888 (£414,958). Dividends 2.296875p per share (2.1875p). Capital Employed M£1.235 (M£1.005). Net Tangible Assets per share 41.6p (32.0p).

...we are proposing to give shareholders the option to take their dividends in cash or in additional shares...

Table titled 'Results at a Glance' showing financial data for years 1971, 1972, 1973, and 1974.

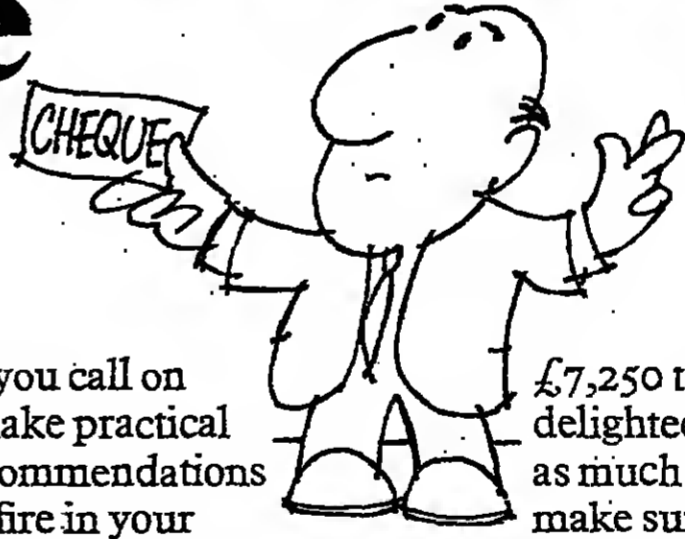
Our famous brands - Minolta - Soligor - GePe - Miranda - Bauer - Plus - Photopia - Regule - Dalite - Wate - Raynox - Plustron - Pal - Sedio - Kovac - Minette

Our various products - Cameras - Projectors - Cine Equipment - Lenses - Binoculars - Photo Accessories - Calculators - Radios - Audio Units - Cassette Recorders - In car entertainment

Full Report to be issued on 23rd September, write for copy to G. B. Snow, Company Secretary, Photopia International Ltd., Newcastle, Staffs.

PHOTOPIA INTERNATIONAL LIMITED. Fourth Successive Year of Record Sales and Profits - Profits Before Tax Multiplied over 4x in past 4 years.

A high fire premium has never prevented a fire



Our first aim, if you call on our services, is to make practical and economical recommendations on how the risks of fire in your business can be cut to the minimum.

£7,250 to £600. No-one was more delighted than us. Because it's as much in our interest as yours to make sure that fires don't happen.

Calling in Sun Alliance and London to take a fresh look at your company's fire risks will cost very little of your time—and none of your money.

A decision not to bother could just possibly cost the survival of your company. So ask your broker about our specialist fire services.

Or, if you prefer, talk direct to Brian Trace at our Fire Department at Head Office.

His number is 01-588 2345.

SUN ALLIANCE & LONDON INSURANCE GROUP. 1 Bartholomew Lane, London EC2N 2AB.

SAVILLS
INDUSTRIAL PROPERTY
 20 Grosvenor Hill - Berkeley Sq - London W1X 0HQ
 Telephone 01-499 8644 - Telex 263796

London and Regional Market Prices
Bank shares weak

ACCOUNT DAYS: Dealings Began, Sept 2. Dealings End, Sept 13. Couting Day, Sept 16. Settlement Day, Sept 24.
 † Forward bargains are permitted on two previous days.

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1974 High Low Company Price Chgs % P/E				1973 High Low Company Price Chgs % P/E				1972 High Low Company Price Chgs % P/E				1971 High Low Company Price Chgs % P/E			
BRITISH FUNDS															
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
COMMERCIAL AND INDUSTRIAL															
A - B															
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
COMMONWEALTH AND FOREIGN															
LOCAL AUTHORITIES															
FOREIGN STOCKS															
DOLLAR STOCKS															
BANKS AND DISCOUNTS															
BREWERS AND DISTILLERS															
INSURANCE															
INVESTMENT TRUSTS															
OIL															
PROPERTY															
RUBBER															
TEA															
SHIPPING															
MINES															
MISCELLANEOUS															
REGIONALS															
FINANCIAL TRUSTS															

مكتبة النور

Authorized Units, Insurance & Offshore Funds

Table with multiple columns listing various financial products, their providers, and details. Includes sections for 'Authorized Unit Trusts', 'Insurance Bonds and Funds', and 'Offshore and International Funds'.

Appointments Vacant also on page 10

GENERAL VACANCIES

DIOCESE OF CHESTER

DIOCESAN SECRETARY
This key position will become vacant early in 1975. Applications are invited from suitably qualified candidates with administrative, accounting, secretarial and public relations experience. Candidates should also have some interest in church affairs.

A FUTURE IN NORTH SEA OIL
£1,700-£3,500
Our clients, a major Petro-chemical Group pioneer in the North Sea Oil, has several career opportunities on the financial side for young men with a good educational background and some commercial experience.

KING'S HEALTH DISTRICT (TEACHING)
There are vacancies for full time posts in the following departments:
1. General Practitioner
2. General Practitioner (Teaching)
3. General Practitioner (Teaching)
4. General Practitioner (Teaching)

CASHIER
For the Topswear Company, a leading fashion retailer, we are seeking a Cashier (aged 20-30) with good presentation and a pleasant personality.

RESEARCH ASSISTANT
Required in General London. Graduate required with literary and some statistical ability for research in the field of man and environment.

SENIOR BOOKING CLERK
REQUIRED FOR BUSINESS ECONOMY OF TRAVEL AND TOURS TRAVEL AGENCY. Must have minimum 2 years experience in IATA tickets.

CAREER SUCCESS!
DEPENDS upon using your skills in work which satisfies you. Guidance is available to help you choose the right career path.

A GOOD MOVE
For a first job O/A level candidates (17-21) offered by progress, training and advancement in a pleasant working environment.

MANAGEMENT TRAINING
With good O/A levels (19/24) and some domestic experience, needed by expanding financial services company.

ASSISTANT ACCOUNTANT
A fast growing London-based company with good accounts and administrative experience required for a position of Assistant Accountant.

PUBLIC RELATIONS
Central London consultancy and international accountancy firm. An excellent opportunity for a public relations officer with a degree and some experience in PR or journalism.

MARRIED COUPLE required by distinguished country house hotel in the Cotswolds. All day, 5 days a week. Some experience preferred but not essential. Must be interested in a career in hotel and catering.

LEGAL APPOINTMENTS
ALANGLATE LEGAL STAFF NEW
Many years' experience in dealing with all aspects of legal work in London and the U.K. enabling us to offer a wide range of services to all employers and other persons looking for careers in the legal profession.

ACCOUNTS CLERK, Maths or Economic Studies. D.T. or O level. 2000 plus threshold, with 60% bonus. No previous experience necessary. 400-450 per week. No do not speak.

BOOKKEEPER. They are real promotion prospects with this international company. Salary at 25 p.p.w. is £2,500 p.a. plus 10% bonus. No previous experience necessary. 400-450 per week. No do not speak.

PROSPECTIVE YOUNG MANAGER for French Cafe Restaurant in Manchester. Top wages. 250-300 p.w.

WORKING HOLIDAY on North Devon. Excellent opportunity for young man. 17-20 O.A.S.

ACADEMIC Book Selling Assistant in leading bookshop. Enthusiasm and initiative essential. Salary at 25 p.p.w. is £2,500 p.a. plus 10% bonus. No previous experience necessary. 400-450 per week. No do not speak.

AGRICULTURAL RESEARCH FOOD RESEARCH INSTITUTE SCIENTIFIC OFFICER
Applications are invited for a post as SCIENTIFIC OFFICER in the Food Research Institute, Wellesbourne, Warwick. The post involves research in small groups concerned with the chemistry of food.

MANAGEMENT AND EXECUTIVE
EXECUTIVES over 40 are invited to send for a new career prospectus. Details of 250 new jobs in various fields. 430 Park Road, Slough, Bucks.

ACCOUNTANCY
ARTICLED CLERKS to start in London and Midlands. Also vacancies in various fields. 430 Park Road, Slough, Bucks.

ACCOUNTANCY UNIVERSITY APPOINTMENTS

CITY CHARTERED ACCOUNTANTS
medium size, have immediate vacancies for Trainee Accountants. Graduates or School Leavers with 2 'A' Levels. First class training including total of six months. But time course at firm's expense.

SALES AND MARKETING SALESMAN EXCEPTIONAL SALARY
post dependent upon age 20-29, experience and ability. Post offered by world famous Sherry Shippers - London Office.

UNIVERSITY APPOINTMENTS
McQuarrie University SYDNEY, AUSTRALIA
SENIOR LECTURER IN LAW IN THE SCHOOL OF LAW
Applications are invited for appointment as SENIOR LECTURER in the School of Law in the University of Sydney.

UNIVERSITY APPOINTMENTS
McQuarrie University SYDNEY, AUSTRALIA
SENIOR LECTURER IN LAW IN THE SCHOOL OF LAW
Applications are invited for appointment as SENIOR LECTURER in the School of Law in the University of Sydney.

PUBLIC AND EDUCATIONAL APPOINTMENTS
COUNTY OF NORTH YORKSHIRE ASKHAM BRYAN COLLEGE OF AGRICULTURE AND HORTICULTURE
Askham Bryan, York, YO2 3PR
HEAD OF FARM MANAGEMENT DEPARTMENT AND FARM MANAGEMENT SURVEY UNIT

ROYAL INSTITUTE OF CHEMISTRY ADMINISTRATIVE ASSISTANT
aged 24 to 26, is required for Examination Department, Russell Square, London WC1B 3DH. The duties are related to the admission, registration and examination of students.

UNIVERSITY APPOINTMENTS
University of Essex REGISTRAR
Applications are invited for the post of Registrar at a salary of £5,000 p.a. plus 10% bonus. The Registrar will be responsible for the day to day correspondence, typing reports and liaising with consultants and checkers.

UNIVERSITY OF THE WEST INDIES - JAMAICA
Applications are invited for the post of Lecturer in the Department of Geography, University of the West Indies, St. Augustine, Trinidad. The post involves teaching and supervision of students.

PROJECT ASSISTANT MONEY WHICH?
Money Which? is a quarterly consumer supplement which deals with money, and sets out to provide the layman with comprehensive, understandable information on investment, insurance, loans, tax and other financial matters.

UNIVERSITY OF BIRMINGHAM DENTAL SCHOOL CHAIR OF DENTAL PROSTHETICS
Applications are invited for the post of Chair of Dental Prosthetics in the Birmingham Dental School. The post involves teaching and supervision of students.

FAMILY CHAUFFEUR c. £46 per week
One of our Managing Directors requires a Chauffeur for himself and family who must be aged 25+, have a valid licence and a clean driving record. 43 hours week between the hours of 8.15 a.m. and 8.00 p.m.

AREA DISTRIBUTION MANAGER
Bass North West Limited, a member of the Bass Christies Group, offers an outstanding opportunity to a dynamic Manager to take full responsibility for one of our major Distribution Depots in the North West.

MANAGEMENT AND EXECUTIVE
EXECUTIVES over 40 are invited to send for a new career prospectus. Details of 250 new jobs in various fields. 430 Park Road, Slough, Bucks.

ACCOUNTANCY
ARTICLED CLERKS to start in London and Midlands. Also vacancies in various fields. 430 Park Road, Slough, Bucks.

Bass North West Limited
The Bass North West Limited logo and contact information for the Area Distribution Manager position.

Secretarial and General Appointments

GENERAL ARCHITECTS/DESIGNERS/PLANNERS WEST END need enthusiastic, methodical, intelligent girl in mortgage, under technical supervision, an established and well-equipped Technical Library including the keeping of job records and job photographs.

MARKET INTELLIGENCE The market intelligence division of ACUMEN MARKETING GROUP requires an Executive in produce market reports on a wide range of consumer and telephone interviewing techniques.

THE JOHN LEWIS PARTNERSHIP RECEPTIONIST Required by ODNEY CLUB, Colindale, Herts. The Club, set in 120 acres of grounds by the Thames, serves as training and residential centre for members of the club.

ADMINISTRATIVE ASSISTANT Required by Company Secretary for company with offices near Heathrow. The position includes maintaining records, some accounting functions including payroll and handling mail.

GERMAN NURSE TONGUE? Great opportunity for the French speaking nurse to join an established hospital in London. The nurse should be qualified in the field of general nursing and have a minimum of 5 years experience.

ACCOUNTS CLERK (female) Exceptional opportunity in Royal Office in the City. General ledger and salary accountancy. Minimum salary £2,000 per annum for really capable person.

CONSUMERS SERVICES ASSISTANT A good telephone manner, a sense of humour and a good ability to bring you the best of our products. You will be working in a friendly and pleasant atmosphere.

YOUNG LADY COURTESY/SECRETARY/RECEPTIONIST An opportunity to work in an elegant and sophisticated atmosphere. You will be working in a friendly and pleasant atmosphere.

LADY ACCOUNTS CLERK Returning to work after a spell at home. You can start up to £1,500 in a very busy office. Hours are 9.30-5.30 p.m. Monday to Friday inclusive.

ENTHUSIASTIC EDUCATED GIRL to join our busy office in the City. You will be working in a friendly and pleasant atmosphere. Salary £2,000 p.a. plus benefits.

SMALL BUT FAST-EXPANDING Estate Agents urgently require experienced and enthusiastic office staff. Salary £2,000 p.a. plus benefits.

ENTHUSIASTIC and reliable girl to help in a busy office in the City. You will be working in a friendly and pleasant atmosphere. Salary £2,000 p.a. plus benefits.

EDITORIAL ASSISTANT, intelligent, creative for lively dept. of American magazine. You will be working in a friendly and pleasant atmosphere.

SECRETARIAL

A CHALLENGING AND VARIED APPOINTMENT— IN A FAST MOVING AND EXPANDING ENVIRONMENT PERSONAL ASSISTANT/SECRETARY TO CHAIRMAN LONDON W1 £2,500-£2,900

INTER-BANK RESEARCH ORGANISATION THE DIRECTOR OF INFO IS LOOKING FOR AN ASSISTANT TO ASSIST IN THE RESEARCH AND ANALYSIS OF THE BANKING INDUSTRY.

TWO DEPARTMENTAL SECRETARIES ONE OF THE DEPARTMENT OF ECONOMIC AND POLITICAL STUDIES, THE OTHER OF THE CENTRE FOR AFRICAN AREA STUDIES. The Director of the Department is looking for two secretaries.

A JOB WITH PROMOTIONS! The charming Director of a London Sales Promotion Company is looking for a hard-working, efficient, friendly and reliable personal secretary.

ARE YOU STILL LOOKING FOR A JOB? If so, you're in luck—we've just found the perfect contact for you from one of our leading recruitment agencies.

GIRLS CHANCE TO EARN AND LEARN! Good basic salary plus commission. Knowledge of shorthand and good typing skills essential.

SUPER PERSONNEL POSITION Renewed S.W.1 company has a vacancy for an experienced and efficient Personnel Officer.

TOP NOTCH POSITION. Organise your initiative and your ability to handle a variety of tasks. Salary £2,000 p.a. plus benefits.

CHIEF EXECUTIVE in large City company is looking for an intelligent and efficient office manager. Salary £3,000 p.a. plus benefits.

CHOOSE YOUR OWN BOSS—Choose your own hours and your own boss. You will be working in a friendly and pleasant atmosphere.

CRADUATES with secretarial skills for temporary office work. You will be working in a friendly and pleasant atmosphere.

STOP! If you're around in the City, you should know about this opportunity. You will be working in a friendly and pleasant atmosphere.

Treble Chance Three winners—what an amazing opportunity. You will be working in a friendly and pleasant atmosphere.

SECRETARIAL

A challenging and interesting appointment—in an expanding Company SECRETARY PERSONAL ASSISTANT LONDON, W.1 £2,250-£2,600

STELLA FISHER BUREAU Very Contented Temps Temporary work for shorthand and copy typists; booklets are available immediately W1, WC2, EC4, NW1, WC1, SW7, SW1.

SECRETARY/P.A. SMALL AMERICAN FIRM IN LONDON REQUIRES A COMPETENT SECRETARY/P.A. AGED 25-35. Good shorthand and typing ability essential.

TEMPORARIES AT A PREMIUM! Normal City office in temporary secretarial work. Salary £2,000 p.a. plus benefits.

THEATRICAL AGENCY SEEKS TALENTED SECRETARY for hectic fast-moving agency. Salary £2,000 p.a. plus benefits.

JAYCAR CAREERS P.A./SECRETARY Expanding West End Consulting firm requires a highly motivated and efficient P.A./Secretary.

KELLY GIRL THE INTERNATIONAL TEMP AGENCY NEEDS IN London interesting assignments. Salary £2,000 p.a. plus benefits.

AMERICAN OIL COMPANY has a very interesting and challenging appointment for a highly motivated and efficient P.A./Secretary.

MANAGEMENT COMMITTEE MEMBERSHIP An opportunity to join the Management Committee of a leading company. Salary £3,000 p.a. plus benefits.

LIBERAL Parliamentary Candidate with additional business and public relations experience. Salary £2,000 p.a. plus benefits.

TOURIST PROMOTIONS Organisation requires a highly motivated and efficient P.A./Secretary. Salary £2,000 p.a. plus benefits.

WINE IMPORTERS seek temporary P.A. Secretary for their London office. Salary £2,000 p.a. plus benefits.

SECRETARY FOR M.O. Advertisements for a highly motivated and efficient P.A./Secretary. Salary £2,000 p.a. plus benefits.

SECRETARIAL

SECRETARY AND RECEPTIONIST We are seeking new private offices in St. James's area for a small firm of accountants. Salary £2,000 p.a. plus benefits.

General Secretary of Third World Charity Urgently seeks SECRETARY/P.A. An important post involving full-time work for the charity.

COLCHESTER ARCHAEOLOGICAL UNIT SECRETARY/ADMINISTRATOR Initiative and hard typing speed necessary. Salary £2,000 p.a. plus benefits.

GROUP O & M MANAGER who heads a young busy team is looking for a friendly and efficient P.A./Secretary. Salary £2,000 p.a. plus benefits.

SECRETARY/P.A. LISTEN There is a top salary for this or post with a busy firm. Salary £2,000 p.a. plus benefits.

YOUNG PERSONNEL ASSISTANT Excellent opportunity for an intelligent young girl with good typing and a knowledge of office procedures. Salary £2,000 p.a. plus benefits.

ADAPTABLE SEC./P.A. Preferably single to work for a busy firm in the City. Salary £2,000 p.a. plus benefits.

SECRETARIES 3 months to spare? We have vacancies in the above areas. Salary £2,000 p.a. plus benefits.

SECRETARY required for Managing Director of well established company operating in the City. Salary £2,000 p.a. plus benefits.

HAPPY ON YOUR OWN? P.A./Secretary for a busy firm in the City. Salary £2,000 p.a. plus benefits.

SECRETARIES, temporary and permanent. Top rates. Apply to: Personnel Agency, 40, Pall Mall, London, W.1. Tel: 01-493 2677.

SECRETARY/P.A. to a busy firm in the City. Salary £2,000 p.a. plus benefits.

SECRETARIAL ASSISTANT wanted for busy administrative office. Salary £2,000 p.a. plus benefits.

SECRETARIAL

Secretary with a good head for figures The Group Finance Manager of a multinational chemical company seeks a capable and efficient secretary who is not frightened by figures.

Based at the company's new headquarters near St. James's Park, she will be expected to carry out a full range of secretarial duties with an opportunity to become involved in the running of the department.

A Marriage with a Difference! A Shorthand Typist is needed by a large firm of City Stockbrokers. She will have in hand up to long periods of dictation from research analysts and then produce a well laid out and accurate finished document.

A RARE ONE SEC/ADMIN ASSISTANT £2,300 PLUS The Managing Director of a Major Public Relations Consultancy seeks an intelligent, experienced Secretary/Secretary-Admin Assistant.

BRIGHT YOUNG SECRETARY FOR PROPERTY Small Commercial Property Management Company in Central London seeks an efficient, bright young Secretary/Secretary-Admin Assistant.

LEGALLY HE NEEDS YOU! DO YOU NEED £2,300 P.A.? Work for a busy firm in the City. Salary £2,300 p.a. plus benefits.

PARTNER'S SECRETARY Entertainment industry seeks a highly motivated and efficient P.A./Secretary. Salary £2,000 p.a. plus benefits.

SECRETARIES 3 months to spare? We have vacancies in the above areas. Salary £2,000 p.a. plus benefits.

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SECRETARIAL ASSISTANT wanted for busy administrative office. Salary £2,000 p.a. plus benefits.

DO YOU FIT THE PICTURE?

Pam Wilson joined The Times in May 1972. After qualifying as a teacher and teaching for two years in a somewhat humdrum city I decided the bright lights of London seemed far more attractive.

Advertising Sales Girls were an added incentive and after successfully applying for the job I have been here for two very enjoyable years. It isn't by any means easy and one doesn't always leave at 5.30, but there's a tremendous variety within the job which makes it all worthwhile.

It makes sense to try to find a job that makes the hours enjoyable, something to look forward to and something that offers the chance of satisfaction and fulfillment.

If you now think you do phone John Gard 01-837 1234 extension 7164



ADVERTISING

To place an advertisement in any of these categories...

MARRIAGES

ROBERTS & RADCH—On August 28th...

DEATHS

ETHWIDGE, KATHLEEN MAUDE—On August 27th...

IN MEMORIAM

BIRNBAUGH, CORREN—September 2nd...

FUNERAL ARRANGEMENTS

J. H. KENYON LTD. FUNERAL DIRECTORS

FORTHCOMING EVENTS

THE ROYAL BALLET SCHOOL

MARLENE DIETRICH AT GROSVENOR HOUSE

UK HOLIDAYS

GERMAN MANSIONS

ALCOHOLIC VISITORS

NOTICE OF LOSS

WITH YOUR SUPPORT THE CHEST AND HEART ASSOCIATION

ALGARVE (CARVEIRO) AND ALBUFEIRA

THE LADY NOARE TRUST

LET'S CONQUER CANCER

FISHERMEN'S MISSION

COOKERY CLASSES

MEN'S COOKERY CLASSES

YOUNG GHELSA BRIDGE SCHOOL

POSTERS

NAVE'S NEWS

TOTTENHAM

SALES

TAKERS

ULSTER

ROBERTS

SALES

STEVENS

TAKERS

ULSTER

ROBERTS

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SALES

STEVENS

MEMORIALS: BIRNBAUGH, CORREN, September 2nd...

FUNERAL ARRANGEMENTS: J. H. KENYON LTD.

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MARLENE DIETRICH AT GROSVENOR HOUSE

UK HOLIDAYS: GERMAN MANSIONS

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FISHERMEN'S MISSION

COOKERY CLASSES

MEN'S COOKERY CLASSES

YOUNG GHELSA BRIDGE SCHOOL

POSTERS

NAVE'S NEWS

TOTTENHAM

SALES

STEVENS

PERSONAL COLUMNS

ANNOUNCEMENTS

BRITISH HEART FOUNDATION

CANCER RESEARCH

UK HOLIDAYS

GERMAN MANSIONS

ALCOHOLIC VISITORS

NOTICE OF LOSS

WITH YOUR SUPPORT THE CHEST AND HEART ASSOCIATION

ALGARVE (CARVEIRO) AND ALBUFEIRA

THE LADY NOARE TRUST

LET'S CONQUER CANCER

FISHERMEN'S MISSION

COOKERY CLASSES

MEN'S COOKERY CLASSES

YOUNG GHELSA BRIDGE SCHOOL

POSTERS

NAVE'S NEWS

TOTTENHAM

SALES

STEVENS

TAKERS

ULSTER

ROBERTS

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ROBERTS

SALES

STEVENS

TAKERS

HOLIDAYS AND VILLAS

TRUNK CALL

CUTTING IT FINE

SUNBIRD HAVAS

CHRISTMAS IN SAN FRANCISCO

RESISTA CARPETS

GREATEST SUMMER SALE

SKI WITH US

AUTUMN SUN BARGAINS

ROME

WHEN FLYING

TRAVELAIR

WARNING

AUSTRALIA/NEW ZEALAND

TICKETS TO MOST DESTINATIONS

WORLD-WIDE FLIGHTS

"RETREAT VILLAS"

HOLIDAYS IN GREECE THIS YEAR

AFRICA LOW COST WITH AFRICA SPECIALISTS

HOLIDAYS AND VILLAS

CANARY ISLANDS BARGAINS

KENYA SPECIALISTS

EUROPEAN TRAVEL

AFRICA SOUTH

OVERLAND TRIPS

WANTED

HOUSEBOAT

SPORT AND RECREATION

AVAILABLE GUN

FOR SALE AND WANTED

INVEST IN SILVER

FRANCOIS

AMERICAN AGENT

FINLAND

DAM

PLANT

WAT

DAM

PLANT

WAT

DAM

PLANT

WAT

DAM

PLANT

WAT

DAM

The Times Crossword Puzzle No 13,780

1 2 3 4 5 6 7 8

ACROSS: 1 Wrote about Gray's... 2 China's produce...

LANDLORDS MEET TENANTS

This advertisement found suitable tenants...

LANDLORDS MEET TENANTS: This advertisement found suitable tenants...